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EDITORIALS

WHAT ABOUT YOUNG MEN?

THE Indiana Survey examined a group of 20,598 Sunday school pupils under the age of 25, and discovered that the numbers representing enrollment increased year by year from the first to the twelfth, and decreased year by year from the thirteenth to the twenty-fourth. Less than three and a half per cent of the total were young men from eighteen to twenty-three.

In the Springfield Church Survey Mr. Douglass made the significant remark: "It is not too much to say that Sunday school virtually ceases to exist for the adolescent in the years just before he attains legal majority."

The Sunday schools of the twenty-four white Protestant churches in Macon, Georgia, reported an attendance of 7,923 on November 20, 1927. 353 of these, slightly less than four and a half per cent, were young men eighteen to twenty-three, —and there is a denominational university of 650 students in the city.

In later adolescence the momentous problems of life are acutest. Of the social problem there are two aspects: first, the young man needs and desires fellowship with other men; second, he must make contacts with the opposite sex, and also select a wife. No decision of life brings more important consequences than this which respects the choice of associates.

Education presses for consideration. If in college, the young man must decide whether to use this opportunity to get an education. Fortunately or not, this decision must be made by himself. Professional training is an aspect of the subject, and joins itself to the problem of choosing a vocation. Time is especially important educationally, and cannot be trifled with or unfortunate consequences will follow. Normally, the steps taken in this period with respect to education cannot be retraced with impunity.

What vocation will he choose? If the question has been answered earlier, there are misgivings to quiet. Final decisions must now be made. Experimentation is expensive of time and fraught with peril. Two questions must be answered: What is he best fitted to do by virtue of his native equipment and training,—and what would his friends think it most honorable for him to do? These questions cannot be downed.

Another problem is economic. How are living expenses to be met? The question may be complicated by social and by educational considerations. The individual is sometimes tempted to resort to desperate measures. If support by parents is available, this does not always satisfy the young man, for he may have ideas of self-respect that work contrarily. It may be taken for granted that every young man has an unsolved economic problem.

Political responsibilities may well be mentioned. Some young men fail to recognize them, but many do not, and the welfare of the state requires that they should not. Issues local, county, state, national, and international should press upon everyone who has the right to vote. These issues are more complex to the conscientious young man because of his inexperience and lack of acquaintance with them.

There are ecclesiastical problems. The young man queries about the church: What is it? Why is it? What should be its function in controlling my life? He is inclined in these days to decide such matters for himself! If he has already joined the church, he may feel that he has never really faced the issue as a mature man should. Perhaps the early decision was not his own; or perhaps he thinks of it as one of his "childish things." He is now seeking attitudes that

will be life-long. What he shall find is of greatest moment in his life.

Despite all opinions to the contrary, the young man of today takes seriously his religious problems. What was Jesus? What did he teach? What does he want me to do; and what shall I do about it? Whether religion will be influential, controlling, real, or a garment donned only to be doffed, whether religion shall be denied privately if not publicly,—these problems do inhabit his consciousness. Honest doubts delay his decisions, even as they once did for Thomas. The young man of today needs light, and wants it; he will or will not obtain it!

These facts stimulate the observation, "Surely, therefore, society and state and church, realizing the potentialities of the young men's group, are doing their best with it."

It is quite impossible to analyze here with thoroughness the outlook from this point of view. As for the home, these young men are practically wayfarers. They have departed from Egypt and are not yet in Canaan. Nature has seen to the emancipation from the childhood home for reasons that are so obvious that no one questions her wisdom. The new home is not yet established, and none would advise that it be founded in haste.

Even those agencies—society, state, church—which might be expected to provide the pillar of fire by night and the pillar of cloud by day have scarcely done more than shrug shoulders and wish for the best. The college, even if Christian, raises more questions than it answers. The Young Men's Christian Association, throughout Canada and the United States, in 1927 comprised only 236,353 young men within the period 18-24. Its program makes little effort to meet some of the needs outlined above. The church promotes young people's societies and Sunday schools. Membership figures of the former are not available, but in comparison with the possibilities they are not high; and again one must remark that these organizations do not offer service commensurate with the needs. Sunday schools reach only a part of our total population, and of these only four per cent are young men; and the program of this organization frequently fails to provide those whom it reaches with needed guidance in face of their life-problems.

What is the church doing about its young men? Speaking generally, its principal direct effort to reach them is through the Sunday school. But surely this cannot be called an effort. Why are young men unreached by any church organization? Some may say the answer lies in the inclinations of young men, but this is an evasion: the answer lies in the inclinations of the church!

H. Lewis Batts, Mercer University.

THE OUTLAWRY OF WAR*

THIS is a book review. It is also an editorial, for if ever a problem outside the trodden path of religious education was vital to religious education, it is this question of war and peace. Dr. Morrison outlines the problem:

"If this book has any merit at all, it will be found, I think, in four theses; one, that the problem of war must be disentangled from all other controversies, and, thus isolated, brought directly before the nations for a yes or no decision; a second, that war is an *institution*,—legal, established, sanctified, and supreme; a third, that it can be abolished only by disestablishing it, by casting it out of the legal system of the nations in which it is entrenched; and the fourth, that its disestablishment can be made effective only by establishing in its place an institution of peace *conceived not under political but under judicial categories.* This can be done only by a basic change in international law. A general treaty renouncing war as a means of settling international disputes would crystallize in legal form the moral will of the civilized peoples of the world."

The volume has one, and only one purpose, that of showing that the American idea of the outlawry of war, originated by the Chicago lawyer, Salmon O. Levin-

*Morrison, Charles Clayton, The Outlawry of War. (Willett, Clarke & Colby, 1927, 332 pages, $3.00.)

son, and developed by a distinguished group of Americans, is the only plan thus far produced that can be counted upon to bring real peace. The major premise of the idea is:

"Law, freely established and accepted by the will of the nations, administered with juridical authority by a recognized court, is the direct antithesis of the war system and the constructive final aim of all peace effort."

No scheme, other than "outlawry," recognizes the major difficulty—that war is an "institution," with institutional sanctions, and the one legalized method for settling disputes between nations. It follows, therefore, that war talk and propaganda is never criminal; while preaching peace by other means than war is contrary to present law and is criminal.

The author believes a kind of blind instinct (or was it Providence?) led the citizens of the United States to refuse adherence to the League of Nations with its war heart; and to the World Court, unless it become a court in fact with a real law of nations to adjudicate. He further holds that the tradition of peace in the mentality of the United States is just now in danger of being throttled and lost and its place usurped by a philosophy of war.

Dr. John Dewey in the foreword to the book brilliantly supports the main contentions of the author. He holds that the great mass of the people are law abiding, but—

"Law is on one side, domestic law and international law, and that law sanctions war and demands some degree of active participation in war; ordinary every-day conscience is against war, against organized killing and organized hatred; this dualism reaches deep and extends far and wide. There is one obvious remedy. Place law on the side of conscience. At present the lover of peace becomes the criminal, the outlaw in time of war if he ventures to hold out for peace. Outlaw war and the law is on the side of peace and moral conviction. The criminal, the man who sets himself in opposition to the law of his country and of nations, will then be the man who foments and instigates war."

Dr. Dewey further points out that law in relation to war is not a new thing, for law now sanctions war. The "essential meaning of outlawry" is "a question of having law set against war rather than for it," as at present. Thus outlawry is a direct challenge to the present system and demands the complete reversal of the system under which nations live, for law is a means *"of adjudicating disputes without recourse to violence."*

The book in its entirety attempts to show that the nations have but one avenue of escape; de-legalizing war and legalizing peace. Many readers will disagree with the author, especially in his handling of the League of Nations efforts. There are those who feel a step at a time is the way to final success and that many such steps have been made. There is truth in these criticisms. Dr. Morrison has not tried to find all the values of these other schemes. It is enough for him that all other schemes still recognize war as a fundamental law of nations, and hence are futile.

Some readers may ask why review such a book in a journal devoted to religious education, and especially why include it in the editorial columns. Some would feel that such a book is political and not, therefore, in the field of religious education. The reviewer believes this is a fatal mistake. Religious education has for its task not only the causing of people to become capable of living, but also stimulating them to come to grips with life. War is, perhaps, the most colossal of present human crises. This means that humanity must rethink its philosophy of settling disputes between nations. Hence, any book or article which assists in rethinking the facts and issues involved in either continuing to legalize war or, perchance, in making a total shift and legalizing peace, will be a necessity for resource curriculum material. This book is most certainly of this character.

J. M. Artman.

LIGHTS AND SHADOWS OF THE LEAGUE*

IN order to judge the results of an international gathering of such importance as the annual assembly of the League of Nations, some time should be allowed for reflection. During the sessions the daily press, fed by telegraphic agencies, was filled with more or less sensational details about motions, votes, and resolutions, about a dinner given by such a delegation, about elections and deliberations and other like things. Today we would think of those things as unimportant. We can better judge now the outstanding and lasting features of the last Assembly. Let us briefly summarize them—first the lights, and then the shadows.

Beyond doubt this year's Assembly, in spite of all pessimistic prophesies, was one of the best.

It developed friendships. It was the instrument for coming to Geneva of some 200 delegates and as many experts from more than 40 countries. Among them were 22 foreign ministers, men responsible for the foreign policy of their respective countries, and that often means men in whose hands rests the question of peace or war in their part of the world. They attended meetings and, what is more important, they met informally to talk out matters with their colleagues from other nations. If Briand should go to Berlin or Streseman to Paris, they not only would have trouble at home and be attacked by nationalist parties, but they could not make a step or speak a word without being spied upon. In Geneva nobody pays attention to M. Chamberlain taking coffee with an Italian or Polish diplomat. So they meet and talk and cement friendships and settle things and overcome prejudices. That, after all, seems to me the best thing about this world's Parliament.

It favored disarmament. This is one subject with which no other organization, private or official, is able to cope. Disarmament, in spite of the experiences of millions of citizens a few years ago, and in spite of the good will that may now exist (we are not quite sure whether it does) in some states, needs a tremendous weight of public opinion and the best existing machinery, if it is to be tackled with success. The League is the only organization fitted for this task. After the Geneva protocol had been practically buried by the British Empire, and with all the difficulties the League's preparatory commission had to work against, the issue of limitation of armaments, and possibly of disarmament itself, was put to the Assembly. After masterful deliberation it was embodied in a single resolution embracing motions coming from many quarters (France, Germany, Holland, Norway, Poland, etc.) and carried unanimously by the whole Assembly. This is a real success and an important step forward. Delegates of 40 nations declared that they definitely want disarmament, indicated the way they hope to work for it, and were ready to help the League do this primordial job.

It faced economic problems. It was clear from the beginning that the work so well started by the Economic Conference would continue. The question was, whether to depend upon an advisory committee of government representatives only, or whether to have, besides government delegates, direct representatives of industry, commerce, agriculture, and labor. The newly created committee does consist of all these, and gives a positive hope for a democratization of the League.

Having thus dealt with three outstanding good results of this year's session, namely, the cementing of friendships, the revival of the disarmament problem, and the constitution of an economic commit-

**Editorial note:* World understanding is becoming increasingly important for those who would educate in religion. This report, from the heart of the League of Nations situation, is the beginning of what we hope will be an increasing fund of information from all over the world.

tee with representatives of direct non-government interests, a word may be said about the shadows of the Assembly.

The League is trying to do, perhaps, too many things. It deals with white slavery, with the educational cinema, with mandates, with refugees, with Greek finances, with popular arts, with students and professors, with Polish munitions at Dansig and what not. This activity divides attention, consumes energy, allows for criticism, and increases the budget. It involves danger of red tape and an exaggerated centralization. If some nation is anxious to establish a national park, if some professor is anxious to obtain a scholarship or borrow a book from a foreign library, it certainly is not necessary to do so through the complicated League machinery.

Another shadow is the present system of election to membership on the Council. With all respect to the importance of certain South American and European states, we feel the loss when men like Vandervelde and Benes have to leave the Council and be replaced by men who have neither their experience nor their qualities. The present system, moreover, gives strength to the larger powers, which, having permanent seats and knowing all the backgrounds and tricks, easily influence and outvote such members as sit in the Council for one to three years and come from Cuba, Finland, or elsewhere.

One last observation: Anti-American feeling in Geneva was masterfully altered by Mr. Rockefeller's gift of $2,000,000 for the new League library. Never was such a gift received at the League, never was there hope of building such a splendid international library. So people have forgotten Sacco and Vanzetti and other grievances against Uncle Sam and begin to believe that, after all, America is not so bad.

J. Kose,
International Labour Office, Geneva.

EDUCATION IN RELIGION IN AN AGE OF SCIENCE

ANNUAL CONVENTION OF THE R. E. A., BENJAMIN FRANKLIN HOTEL, PHILADELPHIA, MARCH 6-9, 1928

Tuesday Morning and Afternoon

Joint meeting of the *Association of Directors and Ministers of Religious Education* and of the *Association of Week-day Workers in Religious Education.*

9:30—Devotions, Miss May Wilson Loveland.

9:45—Morning session.

Where do questions involving the relations between science and religion arise in the minds of children and young people?

How do these questions usually resolve themselves?

What churches, church schools, and week-day schools are doing and may do in a constructive way to supply cultural needs in this field or otherwise obviate these frequent and serious conflicts.

Further summaries from the pre-convention study, preceded by a brief statement of the pre-convention paper.

12:30—Fellowship luncheons and business meetings, the two groups meeting separately:

Directors and Ministers: Report of Committee on Reorganization — Edwin Fairley.

Week-day Workers: Report of plans for reorganization—Frank M. McKibben.

2:00—Afternoon session:

The program of the morning continued.

4:30—Auto trip to church plants of interest in and near Philadelphia. Supper enroute. Arranged by Philadelphia directors of religious education.

THE CONVENTION PROPER

Tuesday Evening

Difficulties for Religion in a Scientific Age

1. Why is religion in difficulty in a scientific age?

2. What questions are most often asked by those who are acquainted with scientific development?

3. What practices of religion are those who profess to believe in science giving up or questioning? Why?

4. How do these questions differ as compared with ten years ago? Why?

5. Which of these are questions of the rank and file of the people, which only the questions of those in scientific and educational circles? What is your evidence?

6. What are the chief points of difficulty for religion in relation to science, and what are the most important factors in the situation?

Speakers:

Sir Robert A. Falconer, President of the Association, President of the University of Toronto.

Professor James B. Pratt, Williams College.

Wednesday Morning

Basic Assumptions of Science in their Bearing upon Religion

1. What are the basic assumptions of science in regard to:

a. The material universe; b. human personality; c. social progress?

2. At what points and in what ways (where and how) do these assumptions seem most to challenge the assumptions of religion? Why?

3. What kind of religion is consistent with the basic assumptions of science?

Speakers:

President D. W. Morehouse, Drake University.

Professor F. S. C. Northrop, Yale University.

Wednesday Afternoon

Basic Assumptions of Religion in their Bearing upon Science

1. What are the basic assumptions of current religion in regard to:

a. The material universe; b. human personality; c. social progress?

2. At what points and in what ways do these agree with, at what points and in what ways do these challenge the basic assumptions of science? Why do you think so?

3. What kind of scientific attitude is consistent with religion?

Speakers:

Professor James H. Leuba, Bryn Mawr College.

Professor William Adams Brown, Union Theological Seminary.

Wednesday Evening

Nature of Science and of Religion and their Inter-relation

1. What is common in the assumptions and function of science and religion? What is distinctive in the function of religion and of science in relation to:

a. The material universe; b. human personality; c. social progress?

2. What is distinctive in the contribution of science and of religion?

3. To what extent and in what ways is a person's religion dependent upon his science?

4. To what extent and in what ways is a person's science dependent upon his religion?

5. What is the nature of a person's science, of his religion?

6. What is the relation between a person's science and his religion, and between his religion and his science?

Speakers:

Professor Gerald Birney Smith, University of Chicago.

Professor Edwin E. Aubrey, Vassar College.

Thursday Morning

Necessary Changes in Scientific and Religious Attitudes and Conceptions

1. What changes are necessary in the current attitudes toward and conceptions of:

a. The material universe; b. Human personality; c. Social progress? Why?

2. What changes are necessary in the conception of God and prayer? Why?

3. What changes, if any, are necessary in the practices of religion, such as worship, prayer, conversion, service, etc.?

Speakers:

Rabbi Solomon Goldman, Cleveland.

Professor Mark A. May, Yale University.

Thursday Afternoon

Necessary Changes in Religious Education

1. What changes, if any, are necessary in the teaching of children in regard to religion? In the efforts for the development of religious experience? Why?

2. At what point is our religious education failing to take advantage of the results of science? What needs to be done? How?

3. What is the contribution of a developing science to religious education?

4. What changes are most needed in our present day religious education?

5. Where are we in most doubt as to what is going on? What experimentation is needed?

Speakers:

Professor Hugh Hartshorne, Columbia University.

Mrs. Sophia Lyon Fahs, Union School of Religion.

Professor A. Duncan Yokum, University of Pennsylvania.

Thursday Evening

Banquet

In view of the situation as it has come to light in the convention, what is the likelihood for progress in the immediate future?

Speakers:

Professor John M. Cooper, Catholic University of America.

President Donald J. Cowling, Carleton College.

Dean R. A. Kent, Northwestern University.

Professor Arthur E. Holt, Chicago Theological Seminary.

Rev. J. W. F. Davies, Winnetka Congregational Church.

Friday—Research Day

9:30—Reports on research projects:

Progress of the Character Education Inquiry—Professor Hugh Hartshorne, Columbia University.

Some New Techniques for the Study of Cooperative Tendencies—Dr. Julius Maller, Columbia University.

A Scale for Measuring Attitudes Toward the Church—Professor E. J. Chave, University of Chicago.

The Church in the Changing Community—Professor S. C. Kincheloe, Y. M. C. A. College, Chicago.

Methods of Studying City Churches—Dr. H. Paul Douglass, Institute of Social and Religious Research.

The Study of Mental Disorders as a Basis for Moral and Religious Re-education—A. T. Boisen, Worcester State Hospital.

Research in the Y. M. C. A.—Professor Goodwin B. Watson, Columbia University.

12:30—Luncheon round tables, with selected specialists in charge, on Testing, Surveying, Case Studies, Curriculum Construction, Community Studies, Experimentation.

12:30—Fellowship luncheon of directors, ministers and week-day workers. Topic: "What help has this convention been to me in my local field problems."

2:30—Open discussion on methods of research, in charge of Professor Ellsworth Faris, The University of Chicago.

Address, "Legitimate Fields to be Explored," by Professor Arthur E. Holt, The Chicago Theological Seminary.

SCIENCE AND CIVILIZATION

ARTHUR J. TODD*

THE HISTORY of mankind is written in its beliefs. Man's fears, his hungers, his imaginings have laid their fossil remains deep in the mental strata of a million years or more. Religion, custom, science, all run back into paleo-thought. If every other form of human evolution were rejected we should still have to retain, I believe, some sort of evolution in belief. Most scientific thinkers would accept this much sociology. But many begin to bridle when we declare that all science is organized belief and that an age of science is an age of unparalleled credulity; because they forget that all scientific observation and recording rest upon an assumption, a belief, namely the integrity of the physical senses; and they forget also that the acceptance of a scientific doctrine depends upon faith in the scientist, that is, upon belief in his qualifications, his achievements and his probity. In a word science rests, like modern business, upon credit, upon a body of belief.

It is no insult to science, therefore, to classify it along with the mythologies and theogonies. I do not object even to calling it folk-lore if the critic is not just trying to be cheaply funny. In any event the "science" of one generation is likely to be branded as "mythology" or a "superstitious survival" by the next. From this standpoint human evolution is a substitution of beliefs; and it may be possible even to go farther and claim that it is a genuine progress of belief. What we like to think of as "science" is the latest term in this cumulative process of amassing, organizing and refining human experience. In an evolutionary sense it is the covering term for a rather coherent working body of belief which the principles of selection and adaptation have delivered to us.

Now this is what we really mean when we say that science has made the modern world, or that the great difference between primitive and modern life is knowledge, knowledge organized, science, applied to control over environment, to setting up communication between fellow men past, present, and future; to reduction of time, space, and fear; to insuring man against hostile powers; to prolonging his life; to reducing the area of chance, and to turning blind drift into mastery. And on this score everybody, even Mahatma Gandhi or the American "fundamentalists" could agree to rise up and call science blessed.

Such agreement however is hindered by several facts. For example, there is an acknowledged difference between "science" and "technology." Most workers in the exact sciences would refuse to identify their "principles" and laboratory methodology with such vague entities as *mores* or "culture"; they would point to the radio or to a locomotive or to serum therapy as tangible proofs that their procedure was not mere speculation, theory, or a transitory phase of human beliefs.

Again, "Science" has in the last two or three centuries taken on a materialistic attitude and pre-occupation which seems to have led it farther and farther down a blind alley. For this reason so-called physical science has given us means but not ends, yet scientists have frequently confused the two. It yields tools but no origins, no ultimate goals, no scale of values. Indeed, it glories in a freedom which tends to worship process, organization, mechanism, and to decry as superstitious or irrelevant any question as to object, purpose, or value. In some minds

*Professor in Northwestern University, Evanston, Ill.

this freedom degenerates into the cynicism and irresponsibility of the libertine: yet cynicism is not science any more than asceticism is religion. In others freedom goes fundamentalist and becomes absolutist and intolerant on its own account or as a reaction against clericalism. But dogma is always dogma, and scientific dogma is no more freeing to the mind than was clerical theology.

The resultant evil is perhaps even greater, because theology in its palmiest days never made such promises to the confiding.

Science, for its own sake, needs to recognize this simple fact and to keep in mind its tentative character as merely organized belief at a given time. Otherwise it drives us to a new type of agnosticism, devastating to the prestige of science itself. How, for example, can I join with the physicist in condemning the belief that three Persons can exist as One so long as he persists in trying to make me believe that the hypothetical substance, "luminiferous ether," which pervades all space, is at one and the same time infinitely flexible and infinitely rigid? Yet so I was taught. Was that fact or folklore? Or what becomes of my scientific faith when I have accepted the teaching that religion and all that pertains to the life of the spirit belong to some "imaginary environment," only to discover that this imaginary environment is really the physicist's world of molecules, atoms, ions, and other figments of the human mind? The atom and the ether of the "gay nineties" seem to have gone to join the incubus, the satyr, and the mermaiden of folk-lore.

My quarrel, then, is evidently not with science as such: for I have already recorded my conviction that science as the sum of organized knowledge spells the difference between barbarism and civilization. Nor can I in good faith protest against the scientific spirit, for have I not printed a book lauding it? Nor can we dispense with scientific hypothesis. Our only demand is that hypothesis be kept clear of dogmatism and stand for what it is, namely, belief. There can be no scientific progress without guesses, hunches, flashes of insight, leads, working formulas, generalizations. And a hypothesis which falls short of absolute truth or which is displaced as fallacious is better than no hypothesis at all, for at least it provides the "wages of going on." Truth is a coral island resting upon dead and forgotten hypotheses. Scientific truth cannot be a closed system of absolutes.

In attempting to assess the effect of science upon modern civilization one must trace out the streams of influence which have played upon the twentieth century West and run them back to their sources. It is commonly asserted that western civilization derives its characteristic forms from three sources, the Greeks, the Jews, and Science. From the Greeks the art of thinking; from the Jews religion, from Science machinery and a machine technology. Of course, it is not so simple as that. For example one must reckon in law, particularly the concept of natural law, and administration, Rome's greatest bequests to modern life. And the science which the Arabs gave us divided honors between mathematics and m e d i c i n e, neither of which except by remote tendency could be identified with a mechanistic concept of the universe or a machine civilization.

Perhaps the dominance of scientific thought by mechanism derives from alchemy or astronomy as the primary sciences both in age and exact technique; probably also because physics and physiology developed three hundred years before psychology. In any event, by the end of the seventeenth century the mechanistic concept had become pretty firmly fixed, and a body of doctrine appropriate to that concept began to gather momentum. That momentum was intensified by the ancillary concept that scientific truth could and should be applied. In Newton's time the air was full

of the talk of laboratory experiments, inventions, and machines. The comparative peace which England enjoyed in the first three-quarters of the eighteenth century accelerated the vogue of the new science, and an unusual conjuncture of economic and political conditions provided a stimulating environment for applications of that science to practical ends. The resultant unparalleled succession of mechanical inventions and their consequence have stamped the last hundred and seventy-five years as a new era in human history, the Age of the Iron Man.

Various attempts have been made to express the difference between this age and the past, either quantitatively or by distinctive quality. For example close parallels might be drawn between Greece from Alexander to Augustus or Rome under the Caesars and modern England or America: but one prime distinction persists, namely, the Mediterranean world of two thousand years ago was "full of slaves and empty of machines." It is an economic truism that George Washington would have much more in common with Abraham or Hammurabi than with Henry Ford or Robert Millikan. And the small boy who builds a radio set from parts which he buys at a Five-and-Ten-Cent-Store is a magician beyond the dreams of even eighteenth century professional scientists. Migrations, trade, and culture contacts are as old as man; but canoe or camel back limited their sweep. Only the application of steam or electric power could span the continents and create a world economy or make an Arab sheik the real contemporary of Woodrow Wilson.

The machine has created a new world and given a new color to human thought. I said "a new world"; I should have said a new universe and a new science about the universe. For inevitably an interest grows by what it feeds upon; and science itself could not escape a disquieting Oedipus-complex with her own favorite son, machine-technology, with the result that man, society, life, thought, and ultimate reality have all been reduced to the common denominator mechanism. On the other hand, evidences of a strong reaction are at hand. Scientists themselves begin to repudiate the forced marriage between science and materialism. Philosophers, economists, and industrial leaders join in a chorus the burden of which is the paradox that science has made the modern world, yet threatens to destroy it. The Iron Man threatens humanity just as the "Iron Maiden" killed the medieval heretic who was locked into her embrace. Mahatma Gandhi warns his countrymen to beware of salvation by machinery: "Machinery has begun to desolate Europe. Machinery is the chief symbol of modern civilization, it represents a great sin . . . This civilization is such that one has only to be patient and it will be self-destroyed." And western critics seriously urge us to choose between Ford and Gandhi.

Modern capitalistic industry is charged with defrauding its customers, dehumanizing its workers, snuffing out its leaders at an untimely age, provoking hatred and unrest through starving the masses' mind and body, and involving the world in devastating wars for raw materials, markets, and colonies. The outcry has reached in some quarters such a pitch as to demand an enforced and universal moratorium on all scientific research. Of course, such a demand is as unwarranted and unproductive as the violent smashing of looms and other machinery by mobs of angry workers displaced by the Iron Man.

But to refrain from violence does not mean the opposite sin of *passivism*. I do not believe that the western world is so utterly bereft of reason or wisdom as to sit calmly cannibalizing on its own vitals. But the way out of our present mess, and let us admit that there is a good deal of mess about it, does not lie along the path of wholesale denunciation, bitter invective, or smart talk. Patient analysis of

the situation into its relevant facts alone will put us on the right track. To open the first door it will be necessary to summarize briefly what applied science has actually done in the last two centuries.

To get very far with this analysis we shall have to make certain assumptions, for example, that life is good, that means to happiness are better than lack of them, that communication is, on the whole, better than isolation.

There is no doubt that the western world today enjoys a wider range of means to happiness than ever before in the world's history. The common people are better off, have more comforts, are less dependent upon the vicissitudes of raw nature than were their social betters even a century ago. The margins of living are broader; the standards of living richer and more inclusive. Individuals still suffer acute lack, but on the whole masses are indisputably better off. One proof is the unprecedented increase in population of both Europe and America since the Industrial Revolution. In general, the population of Europe remained static for about a thousand years before the middle of the eighteenth century. From the middle of that century to the outbreak of the World War the population of Europe increased nearly threefold, that is, roughly from about 160,000,000 to 450,000,000. The United States grew from about 4,000,000 in 1789 to 117,000,000 in 1927. The impact of modern industrialism upon Germany increased her population from 41,000,000 in 1871 to 65,000,000 in 1910.

The consuming power of industrialized countries ranges far above the average for agricultural areas. The lengthened average life span of these industrialized countries is one of the marvels of modern history. In three centuries it has doubled. In the United States it jumped from 39.77 years in 1855 to 58.32 years in 1924. That is, it more than doubles the average life of the Hindu who is warned to beware of western civilization. And this increase has paralleled the most intensive industrial activity in American history.

In so far as science is concerned, modern man has been endowed with power over natural forces and his own fate. Bertrand Russell is right in ascribing whatever poverty still exists to failure to recognize this fact. Improved communication increases the size of social units and permits a distribution of both well being and risk; that is, it offers a new form of insurance. That same scientific industrialism which fosters rapid population growth has also made almost inevitably for democracy. By this I mean not merely political democracy, but that more tangible asset the democratization of opportunity. Modern industrial methods have created social surplus out of which to provide education, sanitation, safety, public comforts, recreation, and other indirect subsidies to wages.

For the purpose of lighting the fires of reform and avoiding the sin of complacency it is well enough, perhaps, to sound the charge against predatory wealth, economic imperialism, and a theory of business enterprise which considers only profit and rejects any consideration of service or sharing gains with workers or the public. But it is decidedly not true that the modern worker is utterly disinherited or is exploited by the capitalistic operator just as so much raw material. It may be that the capitalist would like to do so, but that is quite another matter. Every man, woman, and child in the United States has 60 man-power at his service. These sixty mechanical slaves are the creation of modern science applied to power production. Hence, for productive purposes we really have a working population of over seven billion (five times the population of the globe) instead of the paltry forty-one million listed by the United States census. If that figure seems high I shall be content to accept another engineer's estimate. Lauer concludes that

mechanism has multiplied worker effectiveness twelve fold, because during seventy years production has increased sixty fold while population multiplied itself only by five.

Now I am quite ready to grant that a large part of this gain went to the "exploiters" and a much reduced share to the rank and file of the workers. But the rank and file did reap some benefit and that without extra efforts on their own part. After all there are less than 30,000 millionaires in the United States after a century of industrialism; and we point with pride to 20,282,000 automobile owners, nearly 700 times the total of our millionaires. The 15,000,000 Fords were not all bought by millionaires or farmers. Industrial workers consumed a large share of them. And so it goes with other items in the standard of living among an industrial population.

That social well being has not improved in proportion to increased scientific knowledge is not so much the fault of science as of industrial leaders who still stubbornly refuse to avail themselves of the machines, the technique, or the spirit of modern science at its best. Even "scientific management" has by no means penetrated vast areas of large-scale industry or commerce still captained by feeling, hunches, and rule of thumb.

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While it is not true then that western civilization is bankrupt or senescent, many grave items of liability appear on its balance sheet. Not all these are chargeable to modern science nor even to mechanistic science and its tools, but some may be. An old Italian street worker was asked why he worked. "I digga da ditch to getta da mon' to buya da bread to getta da strengt' to digga da ditch." There is the chief indictment of materialistic science, that it robs life of purpose and mechanizes it.

If ecclesiastical religion had given the world a consistent doctrine of man, the science of three centuries ago might have taken a different road. But the church had wobbled in its teaching: now man's body was the temple of the living God; now it was something to be shed in order to be present with the Lord; now it was to be despised, crushed, and mortified by ascetic practices. A young preacher told me within the past few weeks that he believes man is an automatic machine but does not dare say so to his congregation. What wonder then that, just as the West broke the power of the church over the family partly, at least, because the church had never been consistent on the problem of sex, physical science should tend to cast off all show of dualism and go the church one better by pronouncing man a complicated machine.

I say "tend to," because even radical thinkers like Descartes or Newton and their successors for a hundred years did not reject completely the mold of theology. Hence scientific literature for a long time seemed uncertain whether man is a spiritual being with material habits and tastes; or a material being with spiritual yearnings; or a soul embedded in a matrix of matter; or a material machine that secretes or gives off dreams; or a mind engaged in stripping itself of an accumulation of beliefs, nightmares, superstitions. Notwithstanding this lack of strict definition, the persuasion stamped itself upon scientific doctrine that man was sufficiently machine-like and material to be subject to the laws of a mechanical universe and to be a part of it. Since the universe is massive and individual man puny, science offered the tragic spectacle of man as the all but helpless victim of a cosmic order indifferent if not actually hostile. It is to the eternal credit of the scientist who created and believed this creation-myth that he did not gloat nor chortle over the sight.

Some of my friends are inclined to think that I am setting up a straw man when I allege that the theory that man is a machine or definable wholly in material terms expressed itself disastrously

in many phases of nineteenth century social life. I am quite willing to grant that this theory was frequently more latent than overt and that many people who acted as if they held it might not have been willing or able to put it into words. Clear sighted Thomas Carlyle put his finger on it a century ago and warned the world that the "Cash Nexus" was the real offense in the industrial organization and the political economy of his day. This "cash-nexus" is a mere shorthand term which covered then and has covered ever since a set of mechanistic economic ideas and practices.

It appeared, for example, in Malthus' figure of Nature's limited banquet table: there is just so much to go around, hence the supernumeraries must perish through war, pestilence, or other devastating "checks." The "limited quantity" idea reappears as even more crudely mechanistic in the wage-fund theory which was so popular in the years when American capitalism was laying its foundations. The commodity theory of labor has been fought by the trades unions so desperately because they sensed that this doctrine was twin to that of human slavery. They knew that to accept such a degrading definition not only destroyed human personality but by the selfsame process mined the entire foundation of society itself.

Yet even economists committed to the cause of labor have not hesitated to apply mechanistic terms to labor's methods. Competition and the law of supply and demand are applied to human labor so literally as to betray tacit acceptance of the machine-man theory. The subsistence-wage theory is a flower of the same garden. The unilluminated right to hire and fire without restriction, and indeed the whole phenomenon of unemployment, is in no very esoteric sense a phase of that same belief in matter and mechanism which prompted Malthus' "banquet table." On the other hand "ca canny," limiting output, and other more aggressive tactics of labor may be referred to this same notion of a mechanically limited universe: there is just so much work and no more; the fewer people on the job the larger the share of each; the slower we work the longer the job lasts.

This same idea compounded with a bit of Hegelian dialectic, a good shot of Feuerbach and early nineteenth century political economy, produced the so-called "materialist concept of history," the theory of "class struggle," the invocation of violent revolution, and other elements commonly associated with Marxian socialism. To the "scientific" socialist, social process is inexorable, it is the predestination of a cosmic machine.

The vogue of scientific management and personnel administration reveals the same preoccupation of industry with machine-concepts of its workers. Robert Owen warned his fellow manufacturers over a hundred years ago to pay attention to their employees, but his warning seemed to imply that the typical employer regarded his employees as even less than machines. Owen stands as a pioneer in the field of employee welfare work and personnel management. The essence of this phase of management is creation of "plant morale," the rehumanizing of the relation between management and workers. The vicissitudes of personnel work and such a book as Houser's, *What the Employer Thinks,* serve to make clear how difficult it is for even a modern employer to rid himself of the cash-nexus and other mechanistic obsessions.

In another field, criminal justice, the same mechanistic idea has reigned. The classical theory of punishment seems to go on the principle of a sausage machine: each crime is a sausage skin of a certain size for which the law prescribes a certain amount of pain, just so much meat as to fill the skin, no more, no less. The law recognizes a certain play of *motive,* but attaches scarcely more practical significance thereto than it does to formal questions of *capacity* or *responsibility.* The

move to "individualize" penal justice is a confession of the automatic machine theory under which courts have been struggling.

A mechanistic industrialism, when supported by a materialistic theory of races, race contacts, and race struggles, almost inevitably develops into rampant nationalism with its characteristic egotism, ruthless self-assertion, and military adventure. Perhaps here, better than at any other point, can be seen the vicious purposes to which can be put the results of science and invention. For it is not just a question of armor-plate, high explosives, lethal rays, or poison gas; the whole mechanism of propaganda is involved, from printing press and school books and newspapers to telegraph and radio and cinema. Years before the Great War, I watched the evil spiders at work in Germany spinning their subtle web of "Social Darwinism." It was a misuse and, indeed, a perverse misinterpretation of a n y t h i n g really taught. But it caught on amazingly and was accepted widely as genuine science, the biological commission to war on behalf of national desires and racial solidarity.

Democracy has s o m e t i m e s been arraigned as a product of mechanism. Yet I doubt if anybody really ever believed seriously in the mere counting of heads as the essence of democracy. It is rather upon the opponents of democracy that the onus of mechanistic thinking must be fastened. Their most articulate leaders nowadays go back not to St. John, but to Plato, *via* a mechanistic theory of heredity. This pseudo-biology is one of the most dangerous products of science gone dogmatic. It tends to create castes and fixed social status with all they inevitably signify in exploitation, indifference, fear, and social waste. Of course, such science even when mated with an exploitative industrialism could do no worse than religion without science or industry has done for India. But that is obviously no answer to the indictment, for even this pseudo-science claims the welfare of mankind as its sole objective.

Is it not evident, then, that I have not set up a straw man, but that too often modern thought, as Hart points out, isolates machines from their proper functions and even worships them. Does it not appear that we emphasize the mechanism of industry rather than human welfare and the needs of men, the mechanisms of government rather than substantial justice, ecclesiastical mechanisms rather than the life of the spirit, school administration rather than education? In short, mechanical means rather than human ends?

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Confronted with the paradox that science has changed the face of the western world but not its heart, is there no way we may reconcile mechanics and moral values? The tragedy is the incompatibility of multiplied power with human passion. In sociological terms it is cultural lag, for applied science and invention move with such acceleration that social control cannot keep up with them. The evil may sometimes be nothing more than shiftings and the pain of change. The same process which has created large scale industry and the Great Society has, for example, reduced the scale and the significant services of the famliy. We may not like this redistribution of functions, but are we in a position to assert that the new alignment is necessarily evil? That certain elements in contemporary life are badly out of balance is, however, clear enough.

I believe that the greatest help for this lack of balance must come from scientists themselves. Men like Soddy, Haldane, and Millikan are positive on this point. While standing for absolutely unrestricted freedom of thought, one can surely insist that no man has an unlimited franchise to dose the world with his mental nostrums in the name of science. Nor can the scientist claim immunity under the magic phrase that science is an end in

itself. There can be no science for science's sake any more than art exists for art's sake. The high priest of art for art's sake spent his last bitter years in jail. A healthy rising tide of protest begins to assert itself against this notion of science and scientific prerogatives, from masters of science; from those who still believe in the worth of morality and religion; from the people who pay the costs and feel that the game is not worth the candle; from the police who will not ignore moral delinquency though committed by men who, as pseudo-scientists, claim to be beyond good and evil.

Science must accept the idea that it cannot dispense with social responsibility for the conduct of its high priests and for the effects of their "discoveries." Whether they like it or not, their own researches are revealing a world totally different from what they anticipated. A world that is essentially mind and not star dust will force a revision of terminology and basic working concepts throughout the whole range of physical science. We may anticipate, therefore, not a spiritistic intrusion into the laboratory, nor a recrudescence of crass superstition, but rather a recognition that pure science does not mean knowledge as such divorced from any idea of value or ultimate purpose. Naturally, to accomplish this end value must be conceived in the broadest terms as including knowledge of the universe and esthetic joy in its wonders and magnificence. For "value" to man does not mean just more bread and thicker butter, nor even Heine's sugar peas and roses; it means also enlargement of understanding and liberating the imagination.

Put otherwise, this obligation upon science differentiates between objectives and methods. Methods may and must be as impersonal as possible; but objects are always personal. Not even the mathematician or analytical chemist can divest himself of human qualities in his setting up of problems, or in his zest. Beauty, symmetry, transcendental mysteries always fringe this quest, even though his tools may be completely sterilized from all such qualities as love and hate, ambition, worldly recognition, applause of one's fellows, jealousy, desire to benefit the race, and the like.

Just as bloody, violent types of men have been weeded out through age long action of social control and social selection; that is, just as standards of social value have been won and impress themselves on the character of the average citizen, so we may expect that scientists and inventors who fail to consider consequences and value in their investigations and inventions will be weeded out. Scientists need to cultivate moral imagination and social perception in order to guard themselves against the tragedy of finding their pure science prostituted to impure or deadly purposes.

More than all else science needs perspective. It suffers from the "only child" complex. Just a grain of humility and a dash of humor would eliminate the pontifical attitude which sometimes makes it look ridiculous. Perspective would safeguard it against the futility of attempting to dogmatize and to base social policy upon pinhead researches about unimportant things. Most of the embarrassment caused by overzealous eugenists or moron-hunters with their new "decalogues of science" could have been avoided by the biologists and psychologists themselves; it was only necessary to hold fast to the principle that no one can generalize the infinite upon investigations of the infinitesimal. Thus not only the purposes but also the mechanics of scientific research need perspective. And only a *liberal* education can insure that perspective. A Ph.D. who knows only the behavior of white mice and confesses that he knows nothing of philosophy or social science or even human psychology may become a positive social menace. Upon the universities, therefore, as trainers of scientific men, rests

the obligation to give them education as well as research technique.

To avoid pseudo-science, genuine accredited science needs far wider distribution. There are plenty of quacks: we need more Huxleys. Old scientific doctrines now rejected linger on in the minds of laggard teachers, doctors, psychologists, lawyers, captains of industry. Patent medicine makers exploit this fact. Just one illustration: a century ago heat was considered as a substance and called *phlogiston*. Until recently (and perhaps it is still true in backward districts) pharmacists have sold a kind of mud poultice labeled "anti-phlogiston." Physics moved on to new definitions of heat in terms of motion, electricity, or what not, but we are still wrestling with antiquated physics in the form of pharmaceutical folk-lore. Science has a responsibility for cleaning away its own garbage while moving to more modern quarters.

Not all lines of discovery move at equal speed. Hence new types of social control must be devised, more powerful, more discriminating, more flexible than heretofore, if applied science is to become synonymous with increased human welfare. New rewards, distinctions, penalties even, new ratings of success, perhaps even new forms of administration are needed. Such public agencies as the Federal Trade Commission have been pointing the way to protection against fraud and unfair practices. The professional codes adopted by over a thousand trade organizations and professions in the United States illustrate the possibility of control without governmental interference. The move to make business a profession, if successful, should contribute largely to new standards of "success." If any considerable section of the business world would seriously accept the principle that private business is public service, and would enact that principle into established practice, no one would need to worry about science being prostituted to exploitive ends. But to make assurance doubly sure and to meet physical science on its own grounds, why not encourage and endow moral and spiritual research?

Two brief quotations will indicate not only how the minds of some great scientists have been reaching out for spiritual research, but also the deplorable contrast between those great scientific minds and the lesser breed that are still caught in the treadmill of an antiquated materialism and are trying to seduce a student following. Roger Babson recently reported a conversation with the late Charles P. Steinmetz, undoubtedly the world's greatest electrical engineer. They were talking over prospective future inventions in the fields of radio, aeronautics, power transmission, etc. Babson asked Steinmetz: "What line of research will see the greatest development during the next fifty years?" After careful thought, Steinmetz replied: "Mr. Babson, I think the greatest discovery will be made along spiritual lines. Here is a force which history clearly teaches has been the greatest power in the development of men and history. Yet we have merely been playing with it and have never seriously studied it as we have the physical forces. Some day people will learn that material things do not bring happiness and are of little use in making men and women creative and powerful. Then the scientists of the world will turn their laboratories over to the study of God and prayer and the spiritual forces which as yet have hardly been scratched. When this day comes, the world will see more advancement in one generation than it has seen in the past four."

Contrast this with the narrow and belated dogmatism revealed in a passage from a recent book, *The Making of the Modern Mind*, by an eastern university professor: "The farther we travel, the more obscure and insignificant does Man appear. And three points also emerge. Firstly, the uniformity of natural 'law'

remains as absolute in these regions of infinite greatness as in our own world of human dimensions. Secondly, no sign of purpose can be detected in any part of the vast Universe disclosed by our most powerful telescopes. Thirdly, this great new sphere of experience affords not the smallest trace of evidence for the existence of any spiritual entity. We find nothing but unimaginable tracts of space and time in which move bodies by fixed laws toward ends which are wholly fortuitous, and have not the smallest relation to the advantage or requirements of Man."

Can we wonder that the president of that eastern university in his last annual report deplored the fact "that scientific study . . . has fallen far short of the high expectations which were formed of it and for it when the scientific movement in education began some sixty years ago?" He complains that the public mind is as untouched by scientific method as if no such thing existed, and that even men of science themselves, when out of sight of their own laboratories, "betray the most astounding willingness to become the victims of rumors, dogmatic assertions, and emotional appeals of every sort." Part of the difficulty, he believes, is to be found in the fact that science "has been suffering from what may be described as a superiority complex which has prevented it from realizing its true place in the scheme of things."

The Golden Rule has been successfully tried out in several notable industrial plants recently; hence the cash-nexus is not a necessary premise of contemporary business. But there is still the worship of organization, size, and activity as such to indicate that the ghost of mechanism is not exorcised. Manipulation in machine terms is still acceptable business practice. And to be called an "operator" is highest praise. Many sections of industry still labor under the superstition that the more noise and smoke the more production. It is not science, but sheer human stupidity, that tolerates the hideous dirt and noise of industrialism. As I write in this vaunted "most beautiful suburb in America" I can see columns of soft coal smoke pouring from half a dozen chimneys in defiance of health ordinances or smoke inspectors. We would not for a minute permit our neighbors to throw their garbage into our yards, still less into our rooms. Until we regard smoke as garbage, or refuse to allow a man to defy science and standards of human decency by such a waste of good fuel, we are in no sound position to lay our own ineptitude on the back of either experimental or applied science.

No more can science as such be blamed categorically with the destructive forces of dynamite, poison gas, or the submarine. They are chargeable primarily to human passion and only incidentally to that fraction of the world of science which will sell itself to the highest bidder or blindly lend itself to the agents of destruction. Science is not responsible for man's worship of material things, tools, or mechanism. The worst one can charge is that it has fostered this tendency and made it more obvious.

The way of safety, then, seems to involve aiding science to get itself out of its dead-center and its dogma; generating moral imagination through social education; developing more effective methods of social control; challenging religion to offer a spiritual dynamic which will meet mechanistic science on its own ground and prove by the pragmatic test that it has a more complete and more workable system of belief.

SCIENCE AND LIFE

C. E. AYRES*

OUR very present help in time of trouble, the supreme counsellor and guide of modern civilization, is science. This is only natural. Science has received the credit for the modern world. Its claim to represent the predominant influence of modern times has never been seriously challenged even by the former counsellors of Christendom, the leaders of the Christian church. The form of our life is changing; and we look with increasing reverence to science for an understanding of the meaning of the change. The life of the future is to be a scientifically guided life, and the religion of the future will no doubt be scientifically guided, too. But the oracles of science, like all oracles, are ambiguous. What the scientific life will be, aside from rapid transit, remains to be discovered.

I

THE PRESTIGE OF SCIENCE

The awe with which we regard science is without doubt justified. The ways of science are mysterious and awful. They are also inspiring and sublime. They are also transcendentally potent. Thus, to the most superficial observer science presents several stigmata of religion. It can perform miracles. Its sacraments are beyond the understanding of the laity. Its visions are lofty, suffused with a cosmic grandeur beyond any of its predecessors. The heavens declare the glory thereof, the firmament showeth its handiwork.

But the potency, the mystery, and the sublimity of science do not exactly coincide. The problem which we are confronting here is that of any power-system, as for instance Christendom. Does the potency of Christendom emanate from the mysteries of Christian ritual and the sublimities of Christian faith? Or is the prestige of Christian faith derived by imputation from the political and economic power of the Christian peoples? This is the sort of question which believers prefer to avoid, whether they are believers in science, or in Christianity, or in any other system to which power and prestige have been attached. Scientists usually speak of the various aspects of their system as though they were one, and as though they were equal in primacy and potency; and like all believers they resent any prying by outsiders.

Nevertheless it is perfectly apparent that science is compounded of various elements, each of which has its own characteristics. The aspect of science from which are derived its potency and its prestige is not the one upon which the priests of the cult are most prone to dote, while the aspect by which the laity is most stimulated and to which all the potency of science is attached through the popular imputation of prestige is quite distinct from both. These three aspects of science have recently been described by Dr. Scott Buchanan with such extraordinary acuteness that we can hardly do better than to adopt our definitions from his book, *Possibility*, a new addition to Harcourt's International Library of Psychology, Philosophy, and Scientific Method.

> First, there is a body of folklore comparable in magnitude and aesthetic elaboration with the mythology of any historic culture. Second, there is the story of invention and use of scientific instruments and mechanical devices, which have, as we are often told, a most profound influence upon our ways of life. . . . Thirdly, there is an intellectual tradition whose secrecy approaches that of the esoteric doctrines of Pythagoras and the Greek mysteries; this is mathematics and logic. This is nearer the essence of science than either of the others, and is never popularized except in the opaque ritual of the occultist and the university professor.

These various aspects of science are

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mutually dependent, though to varying degrees. The formulas of mathematical physics are sufficiently distinct from laboratory experimentation for a man to be able to devote his life to them, never entering the laboratory at all. Taken altogether, the whole body of formulas, ratios, equations and the like do represent what most scientists consider the true essence of science. They frequently express this view in the assertion that any investigation becomes scientific precisely to the extent to which it can be reduced to mathematical notation. Moreover, scientists are apt to say that the formulas of science contain its closest approximation to absolute truth.

Yet there are indications of a close affinity between the mathematical notation and manipulation of scientific facts and the invention and use of instruments. In the first place and undeniably, no formula is true but experiment has made it so. The numerical data, out of which formulas are mathematically generalized, can be derived only from the mechanical manipulation of the instruments. Regarded in the mood of the devotee, such a thing as Moseley's equation, $V = A(N-1)^2$, has the appearance of eternal and immutable verity; seemingly it has been conjured out of the blue by an exercise of sheer scientific intellect. But actually V stands for the vibration frequency of X-rays deflected by each various element, and can be obtained only experimentally even after we possess the equation; while A is a constant which was discovered to be present only when a number of different V's had been obtained and mathematically arrayed. In one sense mathematics is a language in which mechanical data can be expressed; in another it is itself a form of mechanism—the most general of mechanisms.

This impression is heightened if we consider that the fundamental principle of mathematics is precisely the same as the fundamental principle of machinery. This is the principle of substitution, or of interchangeable parts. Neither can proceed without it. The essence of mechanical control is the assurance of exact repetition—duplication of the machinery and duplication of its operation. The same is true of mathematics. From the number system and the simplest symbols of the primary operations, everything depends on the assumption that any three is equal to any other three, that all multiplication signs mean exactly the same thing and when transferred from one equation to another have precisely the same force, and thus that equals may be substituted for equals *ad libidum*. The ideal of all machinists is realized completely only in mathematics. Mathematics is imaginary, idealized machinery.

It follows from this that mathematical notation and mechanical invention and observation are very intimately connected, so that one could hardly be conceived without the other. From certain points of view these two phases of science must be regarded as the same phase. But even though we regard the distinction as only one between actual and idealized machinery, it is still, for other purposes, a significant distinction. Mathematics, being a generalization and idealization of the mechanical results, occupies a preferred position in the esteem of scientists. It seems to speak with the tongues of men and of angels, to utter truths subtle and profound, far removed from the rattle of machinery. It points rather to esoteric truths than to fumbling experiments, to the goal rather than to the road. Hence the very men who are shocked by the crass suggestion that investigations are scientific only when they are conducted with instruments will themselves blandly remark that investigations are scientific only when they are mathematical. Yet both statements means exactly the same thing.

The identification of the mathematical with the mechanical aspects of science is

important if we are to ascertain the source of scientific efficacy and the basis of the immense prestige of science. The basis of that prestige is not mathematics, nor is mathematical notation the source of scientific power. That would be impossible; for in the active process of scientific investigation the two processes are merged. Neither can be conceived to have priority in time or in importance. We must emphatically deny that science begins with mathematics, and that mathematics presents a range of truth of a higher order than instrumental observation.

When we have done so, we are for the first time in a position to ascertain the nature of scientific truth and thus to arrive at the source of scientific power and prestige. An experimental observation, such as Moseley's ascertaining the value of V for one element, tells what an instrument has done. A mathematical equation, such as Moseley's, tells what an instrument will do. And *nothing more.* Let us admit at once that this is a great deal, mechanically. It includes nothing less than the whole of mechanical technology; but *it includes nothing more.*

This, however, is not all there is to science. There still remains what Doctor Buchanan has aptly called "a body of folklore comparable in magnitude and aesthetic elaboration with the mythology of any historic culture,"—in short, the scientific picture of the universe. The relation of this aspect of science to the others is much looser—so loose that it could conceivably be dispensed with altogether. We are now dealing with the picture of the world as an assortment of galaxies, stars, planets and satellites, crystals and fluids, molecules, atoms, electrons, protons and so on *ad infinitum.* Taken in the dimension of time—the dimension which has raised most controversy among laymen—it is the picture of evolution: solar eruption, nuclear condensation, planetesimal accretion, continental crystalization, hydrospheric erosion, organic germination and the procession of the species through the successive strata.

From the strictly scientific point of view, all this is of the nature of metaphor. It is the figure of speech by which scientists have envisaged their formulas with pictorial significance, just as the mathematical beginner struggles to give pictorial meaning to the binomial theorem—with more or less success. In certain famous cases these figures of speech have been especially useful in stimulating the scientific imagination to further ingenuities. Newton's cannon ball was such a case. In others they have cluttered up the work-shop with worthless images. The "jello" and "spaghetti" theories of ether are a case in point. But in no case was any such picture derived from the experiment or from the formula. In every case the instrument behaves "as though" something or other were to be imagined.

The actual source of this scientific imagery, or mythology, is always some preceding picture. Scientists, reflecting naïvely on the early stages of their greatness, often exclaim over the acumen with which Democritus, or Lucretius, or Thales, or Dante forecast, as by some superhuman intuition, the truths which science was one day to demonstrate. It seems never to occur to these men first that the coincidence is not so strange after all, since they took their imagery from those very sources—the literary classics which they studied in their school days; and second that they have no more demonstrated these little pictographs than Thales or Lucretius did. They have invented a tremendous variety of machines which do a great variety of things with extraordinary nicety, and meanwhile they have developed certain trains of imagery to accompany and pictorialize their formulas until their metaphors have assumed truly Homeric proportions. But that is all. The relation

of their pictographs to their machines remains just what the relation of Thales' pictographs was to the mechanics of his day. In this sense not only did Thales forecast modern science: he consummated it. No one can go further.

Upon this interpretation we should infer at once that the pictorial element of science must be far less stable than the mechanical and mathematical; and this is true. Very seldom are the mechanical achievements of science quite upset. They may be brought to a greater nicety, as Professor Michelson has been bringing his measurements of the velocity of light to increasingly incredible degrees of nicety for nearly half a century. But this does not mean that earlier results are upset. Mathematical equations are practically never demoted. This is what scientists mean when they say that science proceeds not by contradicting but by refining upon the findings of earlier science.

But the pictographs are frequently brought low. Einstein's relativity created a sensation when the public—rather tardily—became aware of the havoc it had wrought in the familiar, Euclidian, picturization of space, time and dimensionality. Working with Michelson's data on the velocity of light, Einstein carried his calculations to a point whither the age-old, earth-dwellers' picture of space and time simply could not follow. He left the public gaping in a ridiculous and quite unnecessary posture of half-witted surprise, a posture which some few sensible people refused to adopt on the ground that, whatever Einstein had or had not demonstrated, it had nothing to do with them, inasmuch as they had no expectation of flying through space with the velocity of light, holding their Ingersolls before their astounded eyes. In this case science not only superseded an old mythology; it completely transcended our ability to mythologize. All efforts at pictures of relativity are preposterous failures.

On this account some scientists are becoming increasingly impatient with all picturization. Various recent developments in sub-atomic physics are so completely out of line with the mythology of the race, inherited from Thales and Lucretius, that no attempts at picturization have as yet been made. Mr. Bertrand Russell recently expressed his preference for the Heisenberg atom over the Bohr atom, chiefly because the Heisenberg atom is quite inconceivable, whereas the Bohr atom is conceivable but insanely so: an atom in which, as Professor Costello says, "when the electron is somewhere, it is invisible; when it jumps through nowhere, then you see it!" In short, science has reached the *reductio ad absurdum* of its own cosmology.

The paradox of this situation, toward which the foregoing interpretation has been moving, is this: science is a technology of mechanical manipulation and control flanked on one side by a mathmatical and on the other by a metaphorical idealization of the instrumental process. Its power derives solely from the development, and application to a wider use, of its machinery. This is the sole source of its prestige. As intellectuals—initiates—the scientists adhere resolutely to mathematical idealizations as the essence of science and the highest truth, simply and solely because they are generalized expressions; though the truths of which they are generalizations are invariably concrete and mechanical, so that whatever power and prestige of truth or usefulness attaches to the generalizations must be derived from the potency of the machines. Meanwhile, on the other hand, the lay public views science chiefly—for the most part wholly—in terms of its mythology. The paradox lies in the fact that the mathematical phase has no meaning except the mechanical meaning, while the pictorial phase has no truth except an

incidental, almost an accidental, illustrative and always hazardous approximation. On its esoteric side, science is true, or at least accurate, but it has no significance for life. On its exoteric side, science is more or less significant, but at most tentatively true and never accurate.

This is a confusing situation. It becomes more confusing as we penetrate further into the relations of each phase of science to common human life.

II

SCIENCE BEYOND LIFE

Like the Ark of the Covenant and the Eleusinian mysteries, science is conducted behind closed doors. The practising scientist leads an extra-mundane existence, disregardful of this hodge-podge, job-lot world of ours, as Bertrand Russell once called it. Civilization need not exist for him, so long as he is in the laboratory: he has no need of that hypothesis. When he gave his famous reply to Napoleon's query about God, La Place made a great deal of trouble for future apologists. He obliged them to explain, with much breathless expostulation, that he did not mean to be irreverent, that he was not making an avowal of personal lack of faith, that what he said must be understood as a scientific statement only. But the fact remains, denude it as we may, that with these limitations it was true. The scientist, as a scientist, has no need of that or any other human fact or fiction.

This is the sense, of course, in which Professor Knight Dunlap recently discarded all the human meaning of evolution. Professor Dunlap is a psychologist: in selecting evolution as the theme of his discussion in a recent issue of *The American Mercury* he was following, no doubt, not so much his own intellectual interests as the main current of recent controversy. The object of his argument is to destroy the supposition of a necessary conflict between science and religion at this point. But unlike many of his scientific brothers he does this not by reconciling the scientific and theological pictures of creation but by denying that evolution, as a scientific hypothesis, has anything to do with any picture of creation, theological or otherwise. On one hand, he says, are the material, the instrumental, facts. No theologian, whatever his beliefs, can very well deny that the rocks do lie in such and such strata, that their chemical and crystaline composition is so and so, that examination of microscopic sections does show this and that. How can he? We have passed the time when bishops could pit their authority against a lens.

Questions can arise only at the point of interpretation. But, queries Professor Dunlap, is science properly interested in interpretations? It is not.

> If the theologian asserts that the whole cosmic process which the scientists have traced began only a few thousand years ago, there is not a single scientific fact with which to controvert that assertion. We know what processes were going on a million years ago, if the earth existed that long ago. We may assume that the earth did exist; the theologian assumes that it did not. If the two assumptions conflict, as they obviously do, it is because neither is strictly scientific; both are theological, or philosophical, as you choose to name them.

What Professor Dunlap has in mind here is the ingenious theory of the elder Gosse, made famous not long ago by H. G. Wells, alias William Clissold. Assume creation according to Moses, and a British bishop, in 4004 B. C. The fact remains that it was *this* world, and not another, which God created. This world, however, is one composed of geologic strata bearing obviously related species, and so on. The supposition that God created all these species and strata by the fiat of 4004 B. C. does not affect the scientific evidence of the order of species and strata to the slightest degree. It only affects the cosmic interpretation we put upon that order.

When Professor Dunlap disavows any

interest in the interpretation he is speaking as an experimentalist or a mathematician should speak, not as a cosmologist. With this limitation, his case is obviously sound—so obviously that we hardly need linger over it. None of the instrumental findings and none of the generalizing formulas of geology and biology are so much as nicked by any assumption as to what the findings and formulas pictorially mean. Theologians have no more reason for taking umbrage at the machinery of science than at the machinery of railroads. Science can not possibly be reconciled to religion, or philosophy, or morals, or public policy, because science, understood as facts and formulas, can not possibly conflict with such as these.

It still remains true that science, or at least scientists, have their cosmologies. Professor Dunlap recognizes this and deplores it. "It is a deplorable fact," he writes, "that efforts are still being made by men who are otherwise scientists to bring scientific evidence to the support of religious doctrines." But what they actually bring is not evidence—not instrumental facts or mathematical correlations—but theories, cosmologies, pictures: the scientific mythology. Professor Dunlap views this aspect of science as being not science at all. He suspects "that many biologists hold the theory of evolution, not as a scientific working hypothesis, but as a religious doctrine."

Perhaps they do. Perhaps the "scientific" picture of the earth and its development is not science at all. This disavowal may dismiss it from the laboratory and so permit the true master-mechanics to wash their hands of it and return to their extra-mundane concerns. But as a problem it still remains to torment those of us who do want to know not only how science works but what it means.

III

THE MEANING OF SCIENCE

For the true scientist, let us assume, science means only the control and elaboration of apparatus and formulas—that is, machinery. But is there any such animal? Professor Dunlap is very positive about the business of the scientist-technician. But there is a tinge of irony in his references to "the Hebrew God" and "the Christian God," and "the Hebrew and Babylonian scriptures" which suggests that, whether for one reason or another, he does not believe in them. Mr. Russell is dismayed by the pictographs of the Bohr atom; but Mr. Russell himself has been a most ingenious pictorializer of the Einstein theory, and he still talks of its "repercussions" upon psychology. Those repercussions can hardly be mathematical, in the present state of psychology. No, I fear that even Mr. Russell occasionally thinks of relativity in pictographs.

Meanwhile, if we look from these paragons of cautions to the general run of scientists, the scene which meets our eyes is dismaying, not to say appalling. Whatever they may do in the laboratory, it is perfectly clear that when they emerge scientists are extremely prone to talking the wildest kind of imagery. Their traffic with the public is almost wholly mythological. Their tone, moreover, is by no means tentative, or hypothetical, or figurative. As Professor Warner Fite views the performance:

> This scientific view of the world has merely appropriated the panoply of authority after destroying the person of the Author. The scientific sociologist proclaims the sacred authority of society in tones that recall the ancient law of Sinai. . . . The scientific biologist then fortifies the authority of society by explaining that in the struggle for existence the solidarity of the species is all-important. His special authority is therefore the Laws of Nature, and for the majesty of God he substitutes the majesty of the Species. His lead is followed by the scientific anthropologist, who discovers in the solidarity of the species the origin and ground of the belief in God and now proposes to reconcile science and religion by demonstrating the solid usefulness of religion.

But Professor Fite is too gentle with his scientists. He credits them at least

with consistency in adhering to the folklore of their departments. He overlooks their disposition not merely to assert the truth of their scientific pictographs but to reach across into theology to pat Jehovah on the back, with kind words of encouragement and a promise of support from sub-atomic physics or bio-chemistry. As Doctor Buchanan wryly says, "Every month sees some new transubstantiation of atoms into angels, of ether vibrations into soul, and evolution into Deity."

What degree of credence shall we place in such pronouncements? That must depend upon what we think they mean. But in determining what they mean we shall receive scant assistance from the scientists. Some of them—cautious methodologists like Dunlap and Russell—may assure us that whatever meaning such theories may have, it was not derived from the laboratory. Then whence was it derived? A scientist of unique critical acumen, Poincare, would say from everyday assumptions. A critical philosopher, Vaihinger, would say from the general reservoir of universal human fictions; and his teacher, the master of critical philosophy, Kant, would say from the form of the human understanding.

No doubt all these answers are correct. The form of all human imaginings must be in some way determined and foreshadowed by the nature of the human mind. But the important point for us is not the universal character of all mythology, but the identification of the figurative language of the scientist with the general fund of human imagery. Theologies—Hebrew, Christian, scientific—come and go; but they all have a common source. Is it surprising then that they all exhibit common elements? The naïve joy of the scientist who discovers that he can dig up skeletons, or discombobulate electrons, and still hold views not essentially dissimilar to those of Moses, is merely another variant of his surprise at the resemblance of his theories to those of Thales. The reason in each case is not a marvelous coincidence nor a divinely pre-established harmony of ideas, but simply that the scientist's notions have actually been drawn from Thalesian and Mosaic sources. As Doctor Buchanan succinctly puts it, after running the gamut of scientific demonology, from vortices and crystals to instincts, habits and conditioned reflexes: "These are the stuff of our culture and civilization as much as angels in heaven and demons in hell were the stuff of mediaeval life; or satyrs, nymphs, demigods and gods were the Olympian stage upon which the Greeks played out the drama of their lives."

Of the relation of scientific cosmologizing to the general imaginative store-house of the race very little is exactly known. The "outlines" of science have contented themselves with telling the story. They have not inquired where the story actually came from nor what it means. On this account Doctor Buchanan proposes that a guild of philosophers be formed to investigate the matter. If our civilization is really interested in truth (but is it?) the thing will certainly be done. In the meantime, however, it is possible to exhibit, in a purely illustrative way, what is meant by the essential identity of the pictographs of science with the imagery of folklore.

For this purpose let us revert to evolution, the battle-ground—so it is alleged—of science and theology. Professor Dunlap proposes that in its contest with theology evolution must assume the form of an alternative theology. Can this be? Taken not as an instrumental formula but as a time-picture of the evolving cosmos, evolution crashes full amidships into the Mosaic account of the creation, but only because it offers an alternative, certain characteristics of which merit particular attention.

In particular let us note the air of optimism which evolution has always

worn. There is about it, from first to last, an atmosphere distinctly evangelical. Can it be our old friend, the road to salvation? Is natural selection, by any chance, the wicket gate? Is extinction the modern version of the wages of sin? Speaking from the laboratory, scientists are very positive in their denials. They point out that for their purposes "the survival of the fittest" has no human, emotional significance. Let us take them at their word, and dismiss the instrumental, formulaic use of the hypothesis forever from our minds.

From the strict, formulaic, instrumental point of view, the phrasing of evolution as the disappearance of the unfit would be just as serviceable. Yet Darwin elected to be affirmative. Why? Why do none of the scientists who deny meaning anything by evolution continue, not scatteringly but unanimously, to say *survival* of the *fit?* The cautious scientist also denies, nowadays, that evolution as a formula has anything whatever to say about the relative position of man among the species. In that case, why did Darwin entitle his great work *The Descent of Man?* Why does the Darwinian ordering of the species continue (roughly) to be in quite universal use? From the laboratory, scientists deny, protesting that they mean nothing; yet no descriptive text of evolution ending in any other species but man anywhere exists. Why?

To these questions only one answer is possible. On its descriptive, pictographic side, evolution is an alternative theology. Nor is it a very wide alternative. Höffding, in his classic statement of the meaning of religion, placed his chief emphasis upon what he called "faith in the conservation of value." In one form or another this sense, the sense of cosmic optimism, is probably a constant in religion. All religions are religions of survival. Now it is impossible to read Darwin, bearing this circumstance in mind, and not come away convinced that from first to last Darwin was shaping the observed facts into a cosmic pictograph explicitly theological in character.

In consideration of which we need hardly be surprised at coming on a scientist, say, in the October *Atlantic Monthly,* intoning that evolution is the method "by which Nature carries on her processes;" that there is "a complete identity between science and religion;" or that evolution "is going to be one of God's chief instruments in developing our knowledge of a coming spiritual and religious universe."

No doubt it is. Already we hear much more of Darwin than of Moses in progressive pulpits. What we need to guard against is only the supposition that on the happy day when Darwin shall fully have supplanted Moses we shall be any better off than now. We need to bear continually in mind that as a supplanter of Moses Darwin was formed not on the good ship Beagle but in the bosom of the Anglican church. Only on its pictographic side does science have any contact with popular belief; and on that side science *is* popular belief. What we shall learn from science about living is therefore limited by the fact that all it knows about living science must first have learned from us.

But all this applies to understanding. Without understanding, or even condescending to take notice, science is still able tremendously to affect our lives. On its instrumental side science is most utterly abstract and devoid of human meaning. Yet it is on its instrumental side that science crashes into us—blindly—but with the impact of a juggernaut.

IV

THE JUGGERNAUT OF SCIENCE

"If God did not exist, it would be necessary to invent Him." But how, pray, should we set about it? The question has for us a terrible pertinency; for from all signs we are very soon going to find ourselves in just the situation Voltaire hypothecated.

The cause of our predicament is not science the formulator of mathematical correlations, nor science the pictographer of cosmic processes, but science the ruthless inventor of machines. Cautious investigators, immured within their laboratories, may call out that they intend no harm to us; indeed, they have no concern with us whatever. Inspired theorists concocting the scientific scenario out of the sequences of popular mythology censored to fit the formulas, may beseech us to have faith in their excellent intentions. We cannot doubt them, since their superstitions are the same as ours. But the condition still remains.

This condition is the mechanization of our culture. Logically, the formulas of science are in a different world of discourse from the ideology, the habits and traditions, of civilization. But actually they precipitate an unprecedented conflict, by force not of logic, but of habituation. We have been habituated to one scheme of life; we are now obliged by the introduction of machinery to assume another. This is the major crisis of modern life.

There seem to me to be three ways in which we might consciously endeavor to face the situation. We are trying all of them, and they are all ineffective.

One is by holding fast to the verities of our ancient culture, and attempting to face down the intruders, science and machinery. This is the way of the Fundamentalist. It is customary among my colleagues of the intelligentsia to speak contemptuously of Fundamentalism. I am not inclined to do so. The way of the Fundamentalist seems to me sincere, consistent and fore-doomed. In speaking against him I have a guilty feeling, as of one striking an invalid. To condemn him out of hand as a spiritual bankrupt seems to me simply condemning our own ancestors. The one object of the Fundamentalist is to keep things where they were. In view of the fact that none of us knows what they will be if they do not remain as they were, this is far from silly. If I thought there were the slightest prospect of the strategy succeeding, I should be a Fundamentalist. But there is not.

The chief reason for this is that Fundamentalism can flourish only among the backward elements of a population, and the backward elements do not understand the nature of the crisis and can not possibly adopt the only tactics able to prevail against their foes. The real impact of science upon them is through machinery. If they could know this, and if they had the power still to destroy our machinery utterly, root and branch (as was done in *Erewhon*) they might succeed. This would plunge us at once back into mediaevalism, which would seem a dismal outcome to those who prefer any future to any past, but quite satisfactory to those who prefer a known past to a highly problematic future. But the Fundamentalist has neither knowledge nor power; for the source of both today is machinery. Science dominates our universities and machinery dominates industry and politics. Since the Fundamentalist does not know that machinery is his enemy, he pitches upon science; and being, by nature, as a Fundamentalist, ignorant of science, he pitches directly upon the one phase of science which is most innocuous—the pictographic phase. All his spiritual force is wasted in the sound and fury of his debate with the metaphors of science. In the meantime, the real business of science proceeds, rolling up more power the farther it goes. The end is inevitable. Like the backward peoples of distant continents, the backward people in our midst are doomed. The logic of events is wiping them out.

The intelligent thing to do, it would seem, is to breast the future bravely. This is the way of the Modernist. For candor, for fine integrity, but above all, for his audacity in the face of dangers

which no one understands better than he does, one is obliged to honor the Modernist. I should be a Modernist if I knew how. But even intelligence has limitations where the future is concerned. How does one, by force of intellect and sublime audacity, invent a god, fabricate a philosophy of life, and hypothecate a culture?

We must understand, says the Modernist; and I am willing enough to try. We must recognize what the nature of civilization is. We must be quite candid with ourselves about the folklore of our fathers. These things which they have worshipped: they are symbols. Very well, let us take them candidly as symbols. But how can I reverence a symbol, all the while saying to myself, "Don't delude yourself, old man; this is a symbol, you know." That is not my notion of the religious state of mind. Have civilizations been held together by conscious symbolism? I confess I do not see how. One of the clearest-headed of our contemporaries, conspicuous for temerity even among Modernists, proposes that we understand and symbolize the unity of our aspirations just as we symbolize our national unity in Uncle Sam. Somehow, the analogy, though it convinces me, leaves me cold and unresponsive. Uncle Sam strikes me as a tragic, even an ironic figure: the wraith of an imagined unity; the figment of incapable imaginations; the disguise of wily politicians. Is he to be the object of our reverence? Washington, with illusions, yes. Lincoln, with illusions, yes. Even C o o l i d g e, with enough illusions. Uncle Sam, with conscious decorations, never!

It is always possible, of course, to pretend to ignore the matter, to give out bland statements assuring the public that the demise of Christian culture has been greatly exaggerated, to utter ambiguous avowals of obscure beliefs and to keep a weather eye on the main chance. For temperamental reasons, perhaps, this way of facing the situation has always struck me as contemptible, partly because it is fundamentally deceitful and partly, no doubt, because it is so profitable. But regardless of anybody's feelings, it is not a possible attitude for many people. Most people, if they see a catastrophe occurring, are too ingenuous to be able to stand about solemnly denying the obvious and all the while waiting to take charge after the smash-up has occurred.

Indeed, admirable or not, all these attitudes are the postures of the ineffective few. The really general attitude is that of complete ignorance, and serene and imperturbable indifference. It is not on that account a comfortable position. The common people bear the brunt of every change; but at all events, they are not wiped out. The waves of revolution pass over them, and when they have receded it appears that the common people are still there, very much as before, doing business at the old stand.

Our *Atlantic* reconciler rejoices in the belief that "this scientific demonstration that religions must exist is the modern Holy Grail;" but I think he overlooks the fact that ethnology has never demonstrated that his religion must exist. Let us assume, as Professor Fite sardonically did, that anthropology can demonstrate the solid usefulness of religion—or, for that matter, of civilization generally. Still, anthropology has never shown that gods can be invented out of hand, or that civilizations are m a i n t a i n e d without change indefinitely, or that men can achieve the best by hoping for the best. If anthropology and history exhibit anything they seem to me to show the impotence of the best minds in the face of changes no one can comprehend, the inevitability of popular upheavals in unpredictable directions, and the perennial advantages of unscrupulous ambiguity. If it is an advantage to know this, then let us enjoy this fruit of science while we can.

IS THERE A SCIENTIFIC PHILOSOPHY OF LIFE?

Ross A. McFarland*

IN discussing this question one is concerned with three great phases of human activity; science, philosophy, and religion. Of these three phases of life, science, in the present century, seems to be occupying the lion's share in almost every realm. This forward sweep of modern science has indeed filled every thinking person with mixed feelings of elation, hope, and fear. On the one hand, many have concluded that science reveals the germ of a life philosophy which will eventually explain the hidden meaning of the universe. They infer that there will be no place left for philosophy except in systematizing and interpreting the findings of science into a system, and that religion, or man's relation with his God, will be completely explained away.

On the other hand, if it is true that science is limited to the discoveries of the material universe, then the necessity for philosophy and religion becomes apparent. In each of these provinces of knowledge every honest man still recognizes his profound ignorance, and yet many continue to assert the validity of the claims of their own fields with equal assurance. If each of these approaches *are* rival ways of conceiving the whole of reality, then there is basis for opposing views, but if they supplement each other, then a synthesis is possible. Perhaps the best approach to so comprehensive a problem is to discuss the claims of science, philosophy, and religion, each in its own right. Only in so far as one is able to understand the aims and inter-relationships of these fields, as well as to comprehend their findings, will one be able to discover whether or not there is a scientific philosophy of life.

Perhaps the best known nineteenth century exponent of the claims of science and the scientific method to offer a key to all of the universe that man need know, was Auguste Comte. He developed a comprehensive view dealing with the implications of science in religion and in philosophy. The salvation of man, and society as well, was to be found only in the dominance of scientific knowledge. Attention was to be turned to the phenomena of the physical world for the only facts knowable and useful. Comte believed that discussion of first causes was meaningless, so he urged the definite abandonment of all search for ultimate ends and the inner essence of things.

Comte believed that a coherent society could be established only through the general adoption of the coherent system of ideas which science afforded. Scientific knowledge was the only knowledge which would be of value in modifying conditions in the physical and social world. Just as in the thirteenth century, the Catholic faith was the unifying principle of the whole of life, so in the nineteenth century the new faith in science would express the enlightenment of a new age.

In his famous law of three stages, Comte traced the progress of the human mind toward maturity. The first stage was the theological or fictive one, in which man explained nature in terms of fictitious supernatural agencies. In the second stage, the metaphysical or abstract, a transitional stage of thought was represented. The mind was still impelled to explain phenomena in terms of beings behind the scenes, but with the increased knowledge of science the fixed properties and the regular effects of phenomena could be observed. The final stage was the scientific or positive stage at which point mankind was now emerging, and which must henceforth afford the only acceptable and secure foundation for

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civilization and its institutions. Positivism was concerned solely with the laws and facts of experience, no attempt being made to penetrate behind phenomena, to what an early nineteenth century philosopher would have called the unknown Real.

In attempting to classify the sciences on the basis of complexity and exactness, Comte recognized that observation of the physical sciences omitted a great body of facts—namely, the social facts of society. He therefore set out to discover definite laws of social experience the same as in the other sciences, and a positive science of society was postulated, sociology. Humanity was to be the highest concept and humanity was therefore the subjective and practical basis for philosophy and religion. The new idea of serving humanity was to satisfy the spiritual aspirations of man, thus replacing all theological conceptions of the past. Humanity was the new spiritual authority, and from this Comte formed a religious conception where humanity was worshiped as the mediator between the outer world and the subjective or spiritual aspect of man. Thus no absolute inner reality existed.

This discussion of Comte's positive philosophy is illustrative of a scientific philosophy of life. It implies that complete knowledge of the material universe and of society would be sufficient basis for a philosophical position. One may go to the history of philosophy from ancient to modern times, and find many statements of this extreme materialistic interpretation. The Greek philosopher Democritus, for example, insisted on the indestructibility of matter, the universality of determinism, and the existence of nothing but atoms and motion.

The extreme behavioristic position, as a philosophy of life, is a modern interpretation of materialism. The underlying presupposition of such a system is that science will eventually be able to explain everything in terms of cause and effect, thereby verifying the existence of a closed system of a materialistic order. Whenever science thus claims to give a complete picture of reality it becomes a closed philosophical position, and there is a direct conflict with religion and with all philosophy which is not materialistic. If, on the other hand, science limits itself to a methodology of discovering facts about a certain realm of the universe, then it is not justified in postulating a life philosophy.

If natural law and God afford rival ways of conceiving the whole, then one must choose between the two. But if they are separate parts of the same reality, then one may include both in a philosophical position. The results of science will help one to formulate the proper sphere for religion and the methods of science will be of great value to philosophy and to religion in dealing with their respective problems. One's general philosophical position will likewise be influenced by the findings of the sciences. It may be possible to throw some light on this difficult problem by turning to science itself to see whether it is concerned chiefly with a methodology in discovering definite concrete facts, or whether it is interested in interpreting as well as integrating these facts into a general philosophical position.

Science assumes that man's physical environment can be described and measured with precision and in simple objective terms. The real watchwords of the scientific method are isolation, fragmentation, and analysis. One cannot do better than turn to Ernst Mach's discussion of the scientific methods and their aims. He said that the world is composed wholly of homogeneous elements constantly changing their mutual relations. Certain relatively stable elements he called physical objects—others, minds or egos. Mach said, "It is the sole business of science to inquire into the connection and combination of these elements, for it is concerned only with the interdependence of phenomena. It does

not seek to explain phenomena by referring them to purposes or hidden causes, but gives a simple and comprehensive account of the relations of dependence among phenomena."

A second great interpreter of science and its methods, Henri Poincaré, also emphasized the factor of technic with which the scientist is primarily concerned. He said that, "In discovering the laws of nature or of objective reality science relied upon experimentation which is a means to an end or a method, while morality and philosophy are concerned with ultimate ends or causes." Science, therefore, is chiefly a method, in contrast to philosophy, which attempts to integrate the results obtained by science into a systematic whole.

In order to show more clearly the aims and results of science as contrasted with philosophy, it will be necessary to examine a representative subject. Physics, for example, is illustrative of the exact sciences which deal with the material order as if it were a closed system of cause and effect. "In a field like physics aesthetic, ethical, and spiritual aspects of the environment give way to qualities such as massiveness, substantiality, extension and duration, since the former cannot be submitted to exact measurement." The triumph of physics is primarily due to the numerical connections between "pointer readings" on various instruments. The physicist works out the exact connections between these "pointer readings" in measuring, for example, the properties of matter such as mass, stress, momentum, and potentiality. When these relationships are calculated, he has reached the limit of his task, for he neither needs to nor can go beyond such boundaries as accurate measurement prescribes. The virtue of working with closed systems or cycles of events as in physics is that there are no loose ends projecting outside the world of physics into the unknown.

In an attempt to determine what science has to contribute to a life philosophy, it has been shown, first, that science is chiefly concerned with the quantitative results obtained by the experimental methods, and second, that physics, typical of the exact sciences, deals with a closed system, turning a blind eye to the properties of mind and of values. Since the discoveries of the physicist will partially determine one's metaphysical position, it is essential that consideration should be given to his findings.

For a complete discussion of modern physical theories one must go directly to the works of scientists like Whitehead, Eddington, and Einstein. Here one need only say that relativity, the quantum theory, and other recent discoveries have confronted the physicist with an entirely new conception of the material world to that presented by the Newtonian theories which were held during the eighteenth and nineteenth centuries. Physics is now in the course of abandoning all claim to a type of knowledge of the entities with which it deals that twenty years ago it took for granted without hesitation. Eddington for example says that "The phenomenon with which the physicist now deals is considered to be ultimately a spiritual phenomenon yet it has the aspects of physical force."

This non-material aspect of matter is excluded from exact science because it cannot be measured by "pointer readings." The chain of connection of the physical entities is the province of physics but the intrinsic essences of those entities is now recognized to be outside of its province. In other words the precise knowledge of the behavior of atoms leaves their intrinsic nature just as transcendental and inscrutable as the nature of mind. The findings of the physicist therefore are insufficient for the complete truth concerning the nature of the universe. Furthermore the facts which the physicist does reveal indicate that a metaphysical philosophy founded

upon materialism would have a false basis.

Professor Whitehead from a background of mathematical physics has recently stressed the inadequacy of scientific materialism as an explanation of the facts of nature. He points to the astonishing success of such concepts in scientific research, but states, "It is quite unbelievable to conceive of nature as soundless, scentless, colorless, merely the hurrying of material, endlessly, meaninglessly."

On account of the inadequacy of scientific materialism, Professor Whitehead contends that the poets have comprehended the concrete events in nature more adequately than have the scientists. The poet finds himself continuous with the world of sounds, colors, and scents, and the evidence neglected by science is utilized in the total picture. The evidence afforded by poetic insight is, therefore, relevant to the philosophy of nature. In addition to this, Professor Whitehead substitutes the concept of "organism" for the "bits of material" of scientific materialism. In explaining what is meant by this organic conception of nature, he shows that it is unwise to accept mechanism throughout inanimate nature and assign or restrict vitalism to some form of living matter. This would result in an untenable dualism, implying a break in the continuity of nature for which there is no warrant. Hence so called mechanism is replaced by the doctrine "that the whole concept of materialism, applied only to any abstract entities, is the product of logical discernment. In place of this is substituted the concrete event which is an enduring organism in which the plan of the whole influences the characters of the various subordinate mechanisms which enter into it."

In this fashion Professor Whitehead substitutes the concept of organic mechanism for scientific materialism and, in addition, those characters upon which the poets have laid stress are introduced into the philosophy of nature. Thus a place is left open for value as a fundamental concept of philosophy as well as a key to some ultimate metaphysical synthesis which as yet Professor Whitehead has not discussed. In regard to the general question of a philosophy of life it is evident that the exact sciences hold sway within the realm of natural law, but that natural law deals with a closed system beyond which the scientist has no authority. What about the science of the cellular processes and of human behavior?

The task of the biological scientist is to discover the nature of organic matter, to reveal its structure and functions, and to formulate laws of its activity and reproduction. The three conceptions of fundamental importance in life processes are (1) the concept of the cell as the morphological unit of all life, (2) the concept of inheritance as the nexus between generations of living forms, and (3) the concept of variation as the means whereby living forms are continually altered, i. e., the law of vital phenomena or evolution. The important problem to consider for a philosophical position in regard to these life processes is whether the physical-chemical explanation is sufficient. In other words, does mechanism operate throughout organic matter as in inorganic matter, or is it necessary to postulate some conception of vitalism or teleology?

The majority of biologists are mechanists in method at least, and it is true that they are justified as scientists to approach their subject from that point of view. By means of this method the biologist is continually going into the field of philosophical speculation for a problem and, after dealing with it in the laboratory, emerging with a piece of definite concrete knowledge. By means of the chemical-physical explanation, biology has built up a remarkable body of scientific facts, demonstrating the merits of the mechanistic approach. This process has been taking place at such a rapid pace that many have been led to believe that

eventually all life processes will be adequately explained in such a fashion. It is in regard to an answer to this question that the discussion between the vitalists and the mechanists is most heated.

A complete answer to the problem of mechanism vs. vitalism in biology cannot be given, for the facts on either side seem to be quite inconclusive. The problem is still largely a philosophical one, and it indicates that biology is even yet in a transitional stage between philosophy on the one hand and an exact science on the other. The large amount of experimental evidence is rapidly taking it into the realm of exact science, but biology may soon recognize the limitations of mechanism as a complete explanation of living processes, just as physics has recognized its limitations in regard to matter.

A possible reconciliation in this field may center around the suggestion that "The physical-chemical processes of the animal organism may be identical with those of inanimate matter, save that they are conditioned by the nature of living stuff. It may be shown eventually that living matter is the result of the impact of mind into the world of mechanism which is governed by chemical-physical laws. This would tend to reconcile the view of biology, that mechanistic laws govern growth and behaviour, and the view of philosophy, that man is a thinking, feeling, willing creature. The very nature of living matter, as well as its evolution to higher forms of life, seems unintelligible in terms of mere mechanism without some concept of mind, purpose, or end entering at some point or other as suggested above. In the realm of biology, then, the physical-chemical explanations are fairly well established, but as soon as mind and certain processes of living matter are brought into the picture, biochemistry and biophysics do not have authority.

Thus far in an attempt to find the germ of a life philosophy in science it has been shown that in physics natural law holds sway, and that in biology physical-chemical laws largely explain living processes. In both cases, however, it was recognized that they have definite limitations and do not give a complete picture of reality, especially in regard to the properties of mind and the functioning of the human organism as a totality. This necessitates a consideration of psychology, which is called the science of mind or of human behavior.

Psychology, which is, perhaps, the youngest of the sciences, is still going through the necessary transitional stage in breaking away from philosophy. Originally, the functioning of the brain and the human organism was practically a total mystery, and the psychical part of psychology occupied a prominent place. With the advent of the scientific method, many problems were put to the rigorous tests of experimentation in the laboratory. These results, in most cases, turned out to be knowledge not about the mind, but about the body. The experimental psychologist, dealing primarily with quantitative data, naturally paid little attention to concepts of the psyche because, by the very nature of the case, it could not be measured. As a result, the non-physical part of psychology has been pushed back farther and farther into the unknown, until at present a sizable body of exact knowledge is at hand. This emphasis upon the physiological correlates of psychological processes explains the close relationship between physiology and psychology, and the difficulty of drawing the dividing line between them.

The process of obtaining quantitative data about the functioning of the various senses, the brain, and the nervous system as a whole, has been so successful that many psychologists have been led to assume that all mental processes can be explained in chemical-physical and physiological terms. But the recognition of these limits has been taken up by other psychologists who have emphasized the impossibility of physiological expla-

nations for such facts as pure memory in contrast to rote memory, the unconscious, purposive striving, and consciousness. These very contrasted differences of opinion have given rise to many controversies, especially over the old problem of mechanism vs. purpose, or whether the human organism is simply a machine. The presentation of the views of the different schools of controversy in psychology is instructive and interesting in this regard.

The first systematic attempt to explain the phenomena of mental life was made by the British school of Associationism. This school of psychology contended that ideas are independent revivable units with permanent power of association, and when one idea is revived others are revived also, according to the laws of similarity, contrast, and contiguity. This conception of mental life was atomistic, implying that ideas are mechanical units governed by the power of these laws of association. The objection to this way of looking at mental life is that the term "power" is metaphysical, and that ideas are not permanent but passing phases of mental life, with an organic rather than a mechanical relationship, the unit being the "stream of consciousness" and not the single idea.

The structural or sensational school was the first attempt to make psychology experimental. Its method is to take some momentary psychosis or state of consciousness and analyze it into elementary contents, and then show how these elements combine. Mind is thus viewed as a mental structure which can be split up and analyzed. The members of this school realize that such a concept is an abstraction since mental contents are not unchanging objects but are rather constantly in the process of changing. They contend, however, that such an abstraction is necessary if mental life is to be treated scientifically at all. Introspection is the method by which they would analyze and dissect sensation into its attributes and the other phases of mental life. In recent times there has been a violent reaction against introspectionism, the allegation being that it is a purely subjective method, unreliable and unverifiable, and generally sterile of scientific results.

The act school, originated by Brentano, was a reaction against the structural psychology, and stressed the fact that mind is active and must be considered in terms of both act and content, the former being psychical and the latter physical. For example, in the perception of a square, the squareness of the four lines is the act or psychological part of the perception and the four lines themselves are the physiological part. The mind, therefore, consists of acts in itself, and these acts should be the basis of physiological investigation. The more recent school of Gestalt Psychology has also reacted against the structural school, insisting that the mind functions as a totality and cannot be split up and analyzed. Koehler and Koffka, the chief exponents of this school, contend that mind is more than a mere bundle of sensations or an additive affair, that it has characteristics in its own right as a result of its total structure or *gestalt*. They have shown that there are aspects of thought even on the animal level which cannot be explained in terms of neural reflexes. The anthropoid apes, for example, are able to gain "insight" into the solution of a simple problem, carrying out the movements to the final goal in immediate succession. They also insist that learning does not take place in terms of trial and error alone or in the building up of reflexes in an additive fashion, but that the total pattern or *gestalt* forms an essential aspect of the process.

The functional psychology grew out of the biological idea of the organism functioning as a unit or totality in response to its environment. Consciousness or mind enters as an adaptive operator in the solving of conflicts in the environment when habit finds itself in an insoluble difficulty. Outside of the solving of conflicts the law of habit operates exclu-

sively. They insist that consciousness cannot be defined further than that it is simply present in its forms such as sensations, feelings, and thoughts, and that apart from these we have no expression of it.

The behaviorists have pushed the interpretation to an extreme conclusion. They deal with the total response of the organism functioning as a unit and rule out of psychology such concepts as imagery, consciousness, thinking, and instincts, which cannot be explained physiologically. Insisting that all subjective processes reported by means of introspection have prevented scientific progress, they treat human and animal conduct entirely in terms of implicit and explicit behavior. Feeling and emotion is explained by glandular secretions, and thinking is accounted for in terms of implicit speech mechanism set up in the tongue and larynx.

This view regards the human organism as a machine, explicable in terms of physics and chemistry on the lower levels of cellular life, in terms of physiology in regard to particular organs, and in terms of psychology on the level dealing with the total organism functioning as a unit. The behavioristic approach has been fruitful in investigating the physiological processes by entirely ignoring psychical processes, and indeed it has made speculative psychologists take stock of matters. As a methodology, therefore, it has been of service, but it has been widely condemned of late for evading some of the most difficult problems of psychology simply by denying their existence.

Many psychologists have violently protested against the mechanistic approach, on the grounds that the nature of mind is such as to make it inexplicable unless it can be conceived as reaching out for or striving after an end. Wm. McDougall, for instance, insists that this purposive striving is the very basis of a psychological system since it is found in all forms of life from the amoeba up to man. He objects to the reflex action concept in explaining animal and human behavior, because reflexes lack spontaneity and persistency which purposive action displays. Furthermore, reflexes are dependent upon the stimulus and do not apparently exhibit the phenomenon of seeking a goal or anticipating a coming situation, which is the very essence of purposive action. In regard to the higher mental processes, McDougall recognizes the physiological aspects of rote memory, but insists that pure memory or the reflection upon past and future events is unintelligible in terms of reflex arcs.

From this fragmentary account, it appears that psychology, the youngest of the sciences, seems to be in perhaps the most controversial condition of them all concerning mechanism and purpose.

As far as a scientific philosophy of life is concerned, the investigation of psychology has made a contribution as to the value of the scientific method, but it has not revealed any basis for assuming that mind or behavior is adequately explicable in terms of mechanism.

Thus far, in attempting to find the germ of life philosophy in the physical, biological, and psychological sciences, it was recognized that they ruled out the non-physical aspects of the universe and were relevant only to quantitative measurement. It is now necessary to consider the claims of the social sciences to see whether they force one to adopt a philosophy of scientific materialism. There are differences of opinion as to whether the social sciences can ever be quantitative in the sense of the natural sciences. Without doubt the social scientist must measure his facts and define his statements in objective terms as far as possible. Only in such fashion can a body of facts be established so that the student of the social sciences can speak with the authority of scientific data.

Marshall states that "A law of the social sciences is a statement of social tendencies, i. e., a statement that a certain course of action may be expected un-

der certain conditions from members of a social group. Economic law, for example, relates to the branch of conduct in which the strength of motive chiefly concerned can be measured by a money piece." Marshall believes that economic laws may be compared to the laws of tides rather than to gravitation, since the actions of men are so uncertain and so various. In addition to the fact that social laws are only relatively exact, the social scientist cannot possibly escape dealing with certain qualitative aspects of society. Although it is the duty of social ethics to establish norms, the social scientist is constantly faced with the question of what society *should* be or what is the *best* procedure to follow. The very nature of the data of the social sciences, therefore, is such that we are not forced by them to adopt a philosophical position based upon scientific materialism. On the other hand, they indicate the man has basic spiritual as well as material needs which must be considered.

At the outset of this discussion it was recognized that many have formulated philosophies of life based on science, and one of great influence in its day, the philosophy of Comte, was examined. The method of procedure in this essay has been to see whether the present state of affairs in science warrants such a position as a philosophy. In the first place, it was pointed out that science is primarily a method concerned with the examination and measurement of physical nature; secondly, that physics deals with a closed system turning a blind eye to mind and values, and that its findings indicate that ultimate reality must be of a non-material nature; third, that biology, although explaining growth and certain forms of behavior in physical-chemical terms, has no authority in the realm of mind; fourth, that psychology, the science which deals with mind and the behavior of living organisms, has been unsuccessful in explaining them in terms of a physically measurable substance, and that, on the contrary, there is evidence that mind has non-material characteristics; fifth, it was recognized that the social sciences are not completely quantitative and that they must recognize the qualitative aspects of society. Thus no basic principle or formula has been found in science which forces one to accept scientific materialism as a philosophy of life in a metaphysical sense, thereby ruling out other aspects of reality ignored by science, especially mind and values.

In the discussion which has preceded, one might infer that scientific discovery and analysis is like fitting together certain pieces of the great jig-saw puzzle formulating reality. The scientist encroaches on the field of the philosopher and continually adds other pieces of exact knowledge to the puzzle. This technical achievement interests the philosopher, as far as the implications go, in showing how the total picture is developing, since his task is one of integration or synthesis. The philosopher searches for insight into such questions in the total scheme of things as nature of man and his world, how he fits into this scheme, what meaning and value there is in life, and the opportunities and failures it presents. In poetry, art, and religion, answers to these questions are accepted in completeness based largely on faith and intuition. The answers are thus felt or experienced more than they are cognized.

Science, at the other extreme, accepts nothing unless demonstrated in objectively measurable terms. Philosophy analyzes, gives reason for the various answers, and constructs a system. It prepares the way for religion by showing where science leaves off, and it uses the results achieved by science in order to make its own view more explicit. The philosopher and the poet are often good observers and they call back the unbalanced scientist and religious enthusiast when they have missed or misconceived. Philosophy thus has an approach of its own in collecting the parts for the total

puzzle which is not identical with and which does not necessarily conflict with science, poetry, or religion.

In this essay it will be impossible to discuss whether emphasis should be placed upon philosophical realism, idealism, or pragmatism. All that is attempted is to show, first, that it is not the task of the scientist to philosophize; second, that a philosophy founded upon scientific materialism would have a false basis; and third, to suggest certain starting points for a philosophical position. In examining the field of physics it was pointed out that the modern theories indictate a non-material aspect of matter which cannot be measured by "pointer readings." Many facts in psychology indictate that mind, on the other hand, possibly has certain physical aspects.

Although the ultimate constitution of reality implies these two aspects, matter and mind, it is quite probable that they are, in fact, two extremes of the same pole. Therefore, those philosophers who have drawn sharp dualistic contrasts between matter and mind have been following a false path. Eddington says, for example, that "The division of the world into a material one and a spiritual one is superficial and that the deep life of cleavage is between the metrical and the non-metrical aspects of the world." It will also be recalled that Whitehead objects to the bifurcation of reality, and brings forth the concept of the organism to show that these two aspects of the universe are in reality one. Philosophy has created, therefore, a difficulty for itself by postulating two inscrutables instead of one.

At this point it is necessary to consider the non-measurable aspect of the universe or mind which science does not treat. The philosopher realizes that the world of the natural scientist is an abstraction entirely devoid of consciousness. The mind, therefore, becomes the referee who decides conclusively against scientific materialism. If the view which has been presented here is accurate, that the scientific method does not give an absolutely true picture of reality and that scientific theories are the creations of our minds, then, as C. D. Broad says, "We cannot possibly extend the sway of physics and chemistry to mind for their essence is mechanistic and we should then be describing mind in terms of an emanation from itself." In other words, if the mind is a machine it could not call itself one. "The physical world at some point or, indeed throughout, impinges upon the spiritual and derives its actuality solely from this contact."

It is evident that mind constitutes one of the most important aspects of the universe, and it has weight in its own right in a synthetic view of reality. This mental sphere enables the philosopher to make judgments concerning the true, the beautiful, and the good. It is agreed, for example, that the truth of an argument, the beauty of a picture and the nobility of a deed are in a mental realm. Mind thus has selective power in making judgments, and this forms the basis upon which objects or ideas are evaluated. This selective power of mind is one of its most essential characteristics and, indeed, the aspect which by its very nature evades mechanistic explanation. Thus it is evident that without mind we should have a world without any meaning or value whatsoever.

Very closely allied to the fact of the selective power of mind is its dynamic characteristic. It is difficult enough to treat those aspects of mind and nature which center around their existence, but far more difficult to treat those aspects which are in the stage of becoming. When one regards nature as a historical process, it shows an advance from the physical to the biological and then to the mental phases of being. The scientist justifies one in speaking of a "creative advance in nature," and the philosopher recognizes

that a universe without progress is as meaningless as one without direction or purpose.

This mysterious process of becoming or potentiality and the apparent creation of the new is not in the physical scheme of things and it is one of the most baffling problems in existence. Whether this "creative advance" is good or evil cannot be proved objectively by science or philosophy. It is at this point that the one interested in religion comes forward with the proposal that reality must be conceived in terms of something over and above the material facts, that is, in terms of spiritual values which imply the Good or the directing power of a world spirit—God.

Now that the claims of science and philosophy have been considered, the proposals of religion may be discussed. Religion begins where science and philosophy end, since it deals with the unseen realm which cannot be measured by science nor objectively proved by philosophy. The answers to the hidden meaning of the universe, i. e., where life comes from, the manifestations of the spiritual realm during life and the life beyond, are revealed in religion as in a prophecy By the very nature of these problems the answers are intuitively, not objectively, grasped. The source of evidence concerning this unseen realm of God is through the mind of man and other subjective states such as feeling and intuition. On account of the unseen aspects of religion it is based largely upon faith, and faith is "an outreaching of the mind beyond that which it immediately possesses." Religion is primarily concerned, therefore, with the revelation of the ultimate truth back of the physical manifestation of things which science treats. That ultimate truth centers around the idea of God. God and religion are, therefore, correlative, and if one doubts the existence of God one doubts the validity and legitimacy of religion.

No attempt can be made here to answer the difficult question often asked of religion by philosophy—what is meant by God or by religion. The answer is difficult, because religion is an individual affair. The answer concerning the idea of God will depend largely on one's experience or training, and the answer to the question of religious experience or how one communes with this unseen Reality will also depend on one's experience and temperament. The truth for each person is that which is backed by personal conviction. One view of religion is that it is belief in the reality of the Moral Order, and is, therefore, dependent upon an act of will. Another view is that religion is an intellectual exaltation into the region of Eternal Truth, and is, therefore, a reasoned affair. A third view is that religion is chiefly a matter of worship or a feeling of dependence upon an ultimate reality—God. Whenever one tries to place religion or the approach to God in any of these aspects of man's nature, conative, cognitive, or effective, one usually omits part of the facts, since each one gives an aspect of the whole truth. One of the central principles in religion is that it is the life of the whole man, every faculty of mind and body unified into a single organic whole.

An important element in the religious life is that aspect called worship, or a sense of the holiness of God. In somewhat the same manner as the object of art is beauty, the object of religion is God. In the latter case, "The object is not completely comprehended but worshiped—reached, but not fully grasped." The religious man does not regard God as a creation of man's mind, but as a reality which he directly experiences. This communion with God is asserted as real and as possessing truth in its own right. It is incapable of being fully described, since the essence of the experience is not given in its parts, but in the experience as a totality. Just as in the case of the sunset, complete analysis

into parts destroys the unity or beauty in its totality, so the attempt to analyze the experience in worship destroys its essential meaning. Many, therefore, miss the value of the idea of God by attempting to describe and state what God is, when, in reality, the chief value comes in considering what God means.

Closely connected with the problems of what is meant by religion and by worship is the old problem of whether or not man is a free agent or a machine. An old theological conception used to insist that God was behind or responsible for all human acts. Today one finds a conception in science proposed especially by certain biologists that teleology operates throughout the sphere of living organisms or, in other words, that "there is one far off divine event toward which the whole creation moves." Both views seem as equally untenable as the conception of man as a machine from a religious point of view, for free will disappears if man is conceived of as being either pushed or pulled toward a future event. Possibly a more satisfactory view is that man is independent of this Life Force, and yet has the ability to get in touch with it. The mind of man with its selective power decides the issue, for it gives the individual free will to act as he chooses. Such a view places responsibility upon the individual for self realization of the unlimited potentialities within him, and yet allows for communication with this great Life Force which seems to be operating through the whole of the universe.

In suggesting an answer to the question of whether or not science has the germ of a life philosophy within it, science itself seems to indicate that its purpose is not to philosophize, but to analyze and describe the physical world to which it is limited. Philosophy, on the other hand, criticizes and synthesizes the discoveries of science into a unified system, and at present it recognizes that scientific materialism is a false theory. Religion, in contrast to both, is an attitude toward the whole of reality, treating the needs of man in his daily struggle as well as recognizing the Spirit which works through all things. It is evident from this approach that there is no insoluble conflict between science, philosophy, and religion, but that they supplement each other in a true picture of the whole of reality.

Science has a great message for philosophy and for religion, if they will only grasp the significance of its precise methods and the sphere with which it is dealing so adequately today. In the past the theologian has assigned God to the unexplained realm in the universe. The scientist has been constantly explaining the so called unknown realm in the physical world, and then exclaiming to the theologian from his laboratory: "Here is your God in a formula." In an age of science this has been almost fatal to religion, and has brought about lack of faith in it. Today religion is attempting to combat mechanism the same as in the past it has fought evolution. There are so many checks upon scientific knowledge that if the chemical-physical explanation is inadequate science will recognize it as physics today recognizes a non-measurable aspect of matter. Religion should, therefore, formulate its proper premise. This especially concerns the realm of the spirit, worship, the meaning of life in terms of values, and other unmeasurable aspects of reality where science has no authority. It is, indeed, a forward step for religion to have many of its adherents trained in one science or another. They will, no doubt, introduce the scientific method into religion as far as it is possible, and by knowing what belongs to the realm of science they will recognize it as such and concentrate on those problems in religion which are essential in meeting the demands of modern life.

SCIENCE AS TECHNIQUE OF RELIGION

A. EUSTACE HAYDON*

TO many religious people it still seems strange to link science and religion together. Either traditional religion has not become accustomed to the new climate of a scientific age or the age of science has not yet found its religious orientation. Collaboration has been very difficult to attain. It would have been strange if it had been otherwise. Religion was so confident of its eternal truth, so assured of its authority, so secure in its spiritual technique, so certain of its goal and ideal that the cool challenge of science seemed a threat aimed at the foundations of the spiritual life.

The effort to insulate religion, however, has had unfortunate results. Schemes of theological reinterpretation end in obscurantism and obfuscation devoid of all challenge or meaning to thinking men. The lifting of religion in its ultimate truth to a realm beyond the reach of science, a favorite device of both scientists and religious leaders today, has led to a blind faith grounded on authority or to an equally blind mystical faith grounded on agnosticism.

In all these ways religion has been robbed of its ancient right and manifest duty to build on the basis of modern knowledge a new religious world view for the unification of life, for guidance and inspiration in the tasks of the everyday world. A civilization created by science and the products of science is uncontrolled by any conscious religious idealism or purposive direction toward the realization of religious goals. This is pathetic enough but men may be able to live without religious philosophies; the more important thing is that in its fear of science religion has lost control not only of the creative forces of the modern world, but of the very instruments through which the ideals of religion might be actualized. To build ideals into actuality has been the age-old dream of religion. The central task of religion today is to humanize our knowledge, to harness science to the service of human ideals, to use this marvelous new instrument as the technique for the realization of values.

As all the world knows, the living religions of today were established in their characteristic attitudes and ideas long before the advent of modern science. Religions are the product of man's long struggle to win a satisfying life on the planet. The thread which runs through them all is the quest for satisfactions, material and social, of the needs of human life. Religious ideals are always formulated in terms of human values. Man has always pictured the ideal society, whether in some future age or in some transcendent heaven or in some immortal state, in terms of the joys of happy human relationships. When the gods play a part in religion they are important because they are guarantors of the attainment of the desired values. The glory and the pathos of all the ages of our religious history lie in the fact that man clung bravely to the dream of a worthier world while he had no adequate technique either of knowledge or tools to make the dream come true. The more discouraging his failure the more heavily he leaned upon his gods and the supernatural, the more confidently he projected his hope of the ideal life into a future world. The importance of the supernatural in any religion bears a direct relationship to the success or failure of the practical technique.

All early religions which have a history, won from long experience a practical technique—tools, customs, habits, rules—for the satisfaction of physical needs and

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a social stability. With this and equally as important was the auxiliary technique of magic spell, rite, ceremony, sacrifice and prayer by means of which the extra-human forces were enlisted in the help of man. The supernatural is the realm of the unknown and all the flowers of hope may flourish there. The more important the supernatural, the more other worldly the ideal, the more sacred the claims of priestly magic or mystic yoga. One thing the history of religions makes brilliantly clear; man has been seeking the good life, in this world if possible, if not, then in another. In no religion of any age has he been able to make his hope a practical reality. It remains for our age, equipped with the knowledge and methods of the modern sciences, to try again.

The use of science as the technique of religion need not necessarily wait upon the attainment of a modern religious world view; yet the long conflict of theology with science is to blame for the failure to infuse a religious idealism into the complex civilization created by applied science. Lacking that determined opposition religious ideas change by absorbing new knowledge, and the unity of the world of thought and practice is maintained. Before the emergence of modern science Christianity changed its theology as often as it was necessary to make adjustment to new thought forms. The formulation of a scientific religious world view is another matter. Theoretically our age is just as capable of thought as any age in the past. Theoretically we have just as much right to make our own religious ideology as the men of the middle ages. But the necessary change is so great and the authority of the past so dominant that religious ideas and the working ideas of life have remained on separate planes. The new knowledge to be absorbed is revolutionary. The traditional theological thought forms are challenged from every direction by the natural, social and religious sciences. The nature of the universe, the place of man in planetary history, the nature of human nature are all seen in a new and strange light. Social institutions, law, moral codes, theologies, symbols, religious philosophies are all infected with transiency; they are functional phases of the flowing life of an ever-changing world. Absolute authority, eternal validity, finality disappear.

The religious sciences vindicate the vital function of religions in the history of the race and appeal for the creation of a unifying modern religious ideology based on and capable of moving with the trustworthy findings of the sciences. So the religious drama will have once more its cosmic theater. So men in their religious quest will feel their continuity with the ages and an at-home-ness on the planet. When that is won, and ere long it will be won, it will seem no longer strange to urge that religious values should be dominant in culture and civilization or that science in all its phases should be the servant of religious ideals. That it does now seem strange indicates how far we have drifted from the practical task of religion as revealed in racial story.

Certainly religion developed as a very practical thing. The needs of living men nourished it. The co-operative efforts of human groups to achieve the satisfactions of life in the presence of an unmastered environment gave it characteristic form. The ideal was not vague and ethereal. It included concrete values, material and social. The satisfactions toward which group loyalty was turned and the religious technique directed were food, the control of sex, shelter, mastery of disease, security from dangers, on the material level and the social values of justice, love, friendship, honor, peace, all the attitudes and behavior patterns for the realization of happy human relationships. That early societies of men aimed at practical goals is very clear. Religion has always sought the good life in a good world. Lack of any adequate method of realizing it weaves the thread of tragedy through the

story of religions and touches with glory the heroic spirit of man. His ignorance and the slow accretion of custom led him to put his faith in magic technique, in ceremony, in communal ritual, prayer and spell. His lack of knowledge and his fear of ever-present danger, known and unknown, made him seek security within the sacred circle of protective rite or behind the barrage of apotropaic spell. Ignorance of the natural world coupled with compelling desire made him build in the line of his hopes the compensating, all-guaranteeing, supernatural realm of the gods. Refusal to abandon the ideal in spite of heart-breaking earthly failure led him to project it beyond life in another world or to a future age when God or God's messenger would establish the perfect society on earth.

Religions vary in this superstructure. Different ages in the same religion shift the scenes and alter the emphases. Elements of cult, the old technique of control, are dropped, changed or reinterpreted with the passing generations. Philosophers refine the supernatural to abstraction or extinction. Demons, ghosts and devils, holding their place through fear rather than desire, are denied and dropped with the first advance of knowledge. The endlessly diversified embodiments of the religious quest, the strange and seemingly futile forms of the technique of realization ought not to blind us to the continuity underlying it all. The meaning of all religions of the past must be read as the effort of man, without sufficient knowledge or effective technique, to win against odds and evils the values of the good life, with the brave faith that at the last the universe will not deny his dream.

Were it not for the confusion of religion with theology and religious technique with the means of relating man to the supernatural world it would be ridiculous to take the time to assert so carefully that religion is man's search for the satisfactions of life, the mastery of problems, the conquest of evils. Every student of the religious sciences takes it as self-evident. It is the social situation which sets the problem for living human beings; it is the solution of the problems of life which dictates the content of the ideal and the form of the theology. The unfortunate and artificial cleavage between religion and civilization which has robbed religion of vitality and civilization of purposive idealism makes it still necessary to remind the western world that religion in its historic meaning is a way of living, a social thing, a value quest, the insistent demand of human groups for joyous, worthful life.

If this be a correct reading of the history of religions then the modern age may take up the old quest with new hope of creating the society in which the full-orbed life may be lived. The creative leader of modern religion has at his command the knowledge and tools of the sciences waiting still, without purpose or direction, for the strategist who will unify them and marshal their powers toward the progressive betterment of man's home in the world. Around him lie resources of fact, of knowledge, of energies, of instruments, of methods, of machines beyond the wildest dreams of the generations past. Moreover, he is sobered by his knowledge of the past, disillusioned in regard to both science and religion. He knows now that evolution may not be taken mystically as identical with progress; that the multiplication of machines and the aggrandizement of human powers do not necessarily mean that life is made nobler or more beautiful; that science does not function automatically as a halo-crowned herald of the millennium; that religion may and often does degenerate into somnambulism, faith in ineffable absolutes far beyond the rough reality of an unsatisfactory world which is simply an anaesthetizing of despair into optimism.

If religion were, in its essential character, fideism, aesthetic emotion, worship, quietistic mysticism or yoga it would be

meaningless to talk of new technique. The traditional technique is holy with age and adequate for these things. But if, as the religious sciences indicate, religion is centered on a way of life, then it is a practical affair of harmonious relationships, physical and social. No religion has ever had a method of building the ideal society on earth, of integrating spiritual values in social organization. Religion today, taking up its historic task, consciously facing the problem which turned the religions of the past to otherworldliness may find in modern science its effective technique.

There are many signs to indicate that religious leaders of all the great world faiths are entering upon this path. The interest in social problems is apparent and a sense of responsibility for social conditions. More important is the recognition that individuals are conditioned by social environment and that the development of the higher life in the masses of mankind awaits the creation of a social structure oriented to that ideal. There is also an impatience with mere idealism. While religion is a matter of ideals it is felt that ideals which are nothing but ideals are empty dreams and a dangerous delusion. This applies with biting force to the historic religions. For ages in all religions there has been the preaching of love, peace, brotherhood, justice, yet none of them has known how to make them social realities. Great prophets have arisen with beautiful gospels, but the method of making their gospels effective in the world was lacking. They are inspiring memories, heartening us in our hope for a nobler life, but the heavy chains of custom bind us still.

The needful thing is to find a way to embody the vision. At last we have been awakened to the urgency of this need by the threat of a civilization which wields the incalculable powers of modern science and recognizes no control of religious idealism. In a world which has been reduced to the dimensions of a neighborhood by science, where the lives of all the peoples are torn from their ancient securities by the new social and economic forces, where millions wander bewildered, where evils of more menacing mien than the demons of old stalk the lands, where selfishness and greed appropriating the technique of science mould the masses to their will—in such a world it is too dangerous to dream. The urgent necessity is to discover the means to subject the material and the mechanical to the claims of the spirit of man, to exalt the higher life of man above the Moloch of mechanism, to win an unquestionable loyalty in behavior to ideal social values. It can never be done by preaching nor by emotional aspiration. The traditional religious technique is futile for this task. The ideal will become actual only as religion uses the method and tools of the sciences for the building of habits, attitudes, customs and institutions which embody the desired behavior patterns.

Some scholars, identifying religion with supernaturalism, predict the passing of religion since science not only disintegrates the old thought forms but has appropriated to itself most of the functions of the practical technique of religion. It is true that in lands where science holds sway the religious technique of agriculture, of medicine, of protection against invisible dangers, rain-making, educational rituals and crisis ceremonies has lately disappeared. The new technique recognizes no religious sanction. This is exactly the ominous fact. If religion had laid hold of these new and effective powers, holding them loyally to the common social ideals we would have escaped the chaos of our age. To have done it, however, the old religion would have had to be reborn. The religion of today, friendly to the sciences and grounded on scientific knowledge, may hope to give meaning and synthesis to life and to lead all the various creative workers in science to loyalty to shared human ideals.

It is, of course, impossible to predict

what the nature of the scientific technique of religion would be in its diversified form adjusted to the manifold problems. The use of the scientific method in itself would make an immediate change. From it would flow a new attitude toward all doctrines, customs and institutions: an expectancy of change as new conditions appear; a recognition that life has no final solutions and that the technique of religion is not once for all wrapped up in a neat rite or formula but is subject to constant change to meet constantly changing conditions. It would mean a frank facing of facts and an insistence that all the facts be counted. It would mean the end of dogmatism and rationalizing. Both doctrine and program would grow out of the analysis of human experience and human problems.

The things that are most needful to know for the development of a practical program of religion might be included in the first great analysis. It is important to know whether the resources of the earth are adequate to give the material satisfactions of life for the ever increasing population. An uncontrolled birth rate and a diminishing minimum of material goods available for each individual would veto the hope of ever establishing the era of brotherhood and justice on the earth. We should know what resources of science in instruments and technique are available for the service of man and how they are now used and controlled. We should have at hand the findings of science as to the capacities of human nature. Doctrines of original sin, theories of inferior races, belief in ineradicable attitudes and instincts have held their place as truths in many religious structures and colored their ideals and programs. We should know the nature of social controls, the traditional habits and attitudes, the unchallenged ideas and the dominant behavior patterns of the religions of the world. We should know the factors at work producing change in the various religions of the modern world, and the nature of the modern drift of the old religions as they are coming to terms with the new conditions of a scientific age. Such an analysis would give a broad survey of the problem of religion and an indication of the basic conditions for the projection of the religious ideal.

In the light of the ideal the scientific method might then be focused on specific problems. The problems which loom large as a challenge to religion in the immediate present make the hope of easy or speedy solution fantastic, yet their solution must be undertaken if religion as the enjoyment of the good life on earth is to be attained. As the basis of all there is the provision of an opportunity for the material needs of plain living. Religion has begun the attack upon this problem in the western world but the organized forces of religion have no research foundations for the assembling of the facts nor for analyzing the factors involved in the problem of poverty so that they can either move or speak with authority toward any solution. It would seem to be a special task of religion, seeking a good world, to analyze the problem of modern war and on the basis of a knowledge of its causes to lead with authority toward peace. A related problem is the discovery of the methods by which industry and government may be made the servants of the higher life. During the last two centuries they have escaped all control of the religious ideal and resent the interference of the religious leader or the advice of the religious institution. Yet nothing is clearer than that the creators of the conditions under which life must be lived have a very important function in deciding for or against the chances for the good life for millions of people. A twin problem is the ordering of the community social environment and the educational program which will make possible the development of creative individuals, tolerant, capable of thinking in the light of facts, socially minded and able to cooperate in the solu-

tion of problems of the shared life. Finally there is the problem of building the world organizations to act as mind and conscience in the facing of issues which involve the separate families of mankind and so put intelligence, goodwill and purpose into the future movement of world history. All these are religious problems if religion is to be taken as the human quest for the values of the good life and all of them demand the technique of science for their solution.

Can we hope that religion will try for the new technique? It is probable that some religious people will prefer to take refuge from an unsatisfying world in the compensatory other world. It is possible that the priests of religion will be the least likely to favor scientific practicalism. Probably many social idealists will prefer not to contaminate their efforts to realize social values by identifying that effort with "religion." It may be that some who are disillusioned will smile that one should hope to actualize the unrealized dreams of the defeated ages. Certainly there are an increasing number who see that unless religion actually builds on the basis of scientific method and scientific knowledge and seriously undertakes to face the facts of evil in the modern world and the problem of making the dreams of religion come true religion in the old sense is ultimately doomed. Rationalizing an ineffective theology, reinterpreting a prescientific technique, and apologizing for anachronistic institutions and ideas may be carried too far in an age that is trained in the scientific attitude and expects to use all the available tools to win a desired goal.

THE SCIENTIFIC ATTITUDE IN RELIGION

WHAT RELIGIOUS ATTITUDE IS COMPATIBLE WITH THE SCIENTIFIC ATTITUDE?

HEDLEY S. DIMOCK*

TWO DECADES ago John Dewey vigorously challenged the proposal to introduce the teaching of religion into the public schools on the grounds that current religion was developing habits of mind at war with the democratic spirit and the scientific temper characteristic of the age.[1]

It is a common yet tremendously significant fact of history that scientific attitudes and concepts have grown up largely independent of, and often in opposition to, the mental attitudes of religion as embodied in the church.[2] Familiar is the story not only of the insulation of the church from science, but of the emancipation from ecclesiastic control of philosophy, business, politics, and education. This secularization of the practical, scientific, and educational processes of society constitutes what is probably the most crucial problem and task facing the modern world now that the necessity of achieving a social motivation of every human activity is recognized.

We must frankly face the fact that traditional religion has developed in the large habits of mind that are incongruous with the mental attitudes which constitute a scientific approach to facts, experiences, and problems. It is inevitable, therefore, that a religious attitude and outlook compatible with the scientific attitude would involve the modification, if not the abandonment, of pre-scientific thought-forms, attitudes, and practices.

There is neither space nor necessity here of considering at any length the nu-

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1. Dewey, John, *The Hibbert Journal*, Vol. VI, p. 801.

2. Smith, G. B., *Journal of Religion*, Vol. VII, p. 337.

merous efforts that have been made to reconcile science and religion. Many, if not most, of the attempted readjustments of both scientist and theologian have failed to carry any compelling conclusiveness to men trained in the religious sciences. And we may guess, at least, that for many of the natural scientists they have been equally unconvincing.

The most common proposals for reconciliation may be included in the following four types: (1) The declaration that the conflict is not between science and religion, but between science and an outworn theology; (2) The resolution of the conflict by denying that antagonism is possible between two "incommensurables." Science and religion have distinctly different functions and operate in two independent areas; (3) The "rationalization" of theological concepts by the method of selecting from, or interpreting, the findings of natural science in a manner that supports or makes tenable the much-wanted presupposition; (4) A more subtle and refined harmonization essayed by philosophers builds on the accredited facts of science but interprets religion in such a partial or exclusive way that it violates the understanding of religion yielded by the religious sciences. These efforts at readjustments simply fail to take into account all of the facts either of the natural sciences or, just as frequently, of the social and religious sciences.[3]

Our task is primarily that of indicating some of the implications of the scientific attitude and method for the mental outlook of a religious person. We shall deal chiefly in terms of general principles—basic principles we hope—as other contributors to this symposium are to formulate the philosophy of life consonant with the facts and methods of the sciences. It may prove fruitful for the analysis which is to follow if we state briefly and roughly at this point what we mean by the "scientific attitude" as that term is employed in this article.

The scientific attitude includes a cluster of qualities that are common to all the sciences, natural, social, and religious. The engineer, the doctor, the historian, the physicist, the biologist, and the psychologist, however their methods may vary because of the different materials and processes in their respective fields, possess certain characteristics in common when they think and work *as scientists.* What are some of these mental qualities?

For the scientifically minded person conclusions, judgments, principles, and theories are formulated and accredited on the basis of the critical analysis of all the relevant facts obtainable. There is no authority higher than his method for discovering, testing, and verifying knowledge. The revision or abandonment of ideas, doctrines, and t h e o r i e s is not opposed but gladly accepted when further investigation requires the alteration as indicative of progress. The scientific mind not only is expectant of change but deliberately dedicates itself to the task of discovery, invention, and creativity. Implicit in the scientific outlook is the developmental, evolutionary conception of the cosmic and social processes. Open-mindedness, freedom from bias, fearlessness in facing facts, the suspended judgment, a naturalistic view of relationships and sequences—these are cardinal qualities of the scientific attitude. Nothing in the universe, be it idea, institution, custom, doctrine, hypothesis, or experience, is entitled to exemption from the analysis, description, and, if attainable, the understanding of the scientist. There are no *"verboten"* signs on the landscape which the scientist surveys.

What are the implications, then, of these mental attitudes for the religious person? What kind of religious approach

3. For valuable critiques of some of these methods of adjustment and for constructive work on the problem see: Otto, M. C., *Things and Ideals;* Smith, G. B., *op. cit.*

to life is compatible with scientific habits of mind?

I

A religious person is loyal to the age-old religious quest of the human race. A primary prerequisite of the scientific attitude calls for an understanding of this ever-changing religious venture in the perspective of its history. Most of the current conceptions of religion are partial, static, and theological. When the developmental nature and the functional significance of religion is understood religion cannot be identified with any theological concept, institution, book, or ceremony, nor with any emotional, mystical, or "near-aesthetic" reaction to the totality of the environing world. These are but phases, mediatory elements, of the deeper religious quest.

Religion produces ideas and theologies as instruments in the achievement of religious ends and purposes. Religious persons produce and maintain institutions, churches, synagogues, and mosques, as means of attaining values and satisfactions. Scriptures and ceremonial; emotional, mystical, or aesthetic relationships with the extra-human environment—all of these are the *products,* the *media,* the *accessories* of the religious life. It is just because man has interests, purposes, values, ideals, needs, and motives that are supremely significant, that are religious *per se,* that theologies, scriptures, ceremonial, and institutions are developed.[4]

A person must be emancipated from a theological and static interpretation of the meaning and nature of religion if he is to come to terms readily with a scientific point of view. True, not everyone can be a specialist in the religious sciences, but a historical treatment of religions might well be substituted in the educational process for the apologetics, past and present. This scientific attitude toward religion would include an appreciation of the changing, developmental nature of all its manifestations. There can be no fixed or final forms of belief, doctrine, rite, or institution; no unchallengeable authority in scripture or church, for the scientific mind. The historian has abandoned the attempt to find a normative religious past with thought-forms and ethical standards of universal validity.[5]

One of the most stubborn obstacles to a thorough integration of the scientific and religious attitudes would be removed if persons possessed something akin to this developmental and functional understanding of religion. There can be no "Genesis or Evolution?" problem to the flexible, historical mind. Nor is religion a particularized, insulated area of human experience for the person who really senses the significance of its function. A religious value is always some other kind of value, social, economic, political, or aesthetic. Religion is an activity, a quest, an endeavor within the total life process to make life richer, more significant, more genuinely satisfying for every person recognized by the religious group. Such a scientific attitude toward religion gives the modern man perspective and equipment for the task of formulating a working philosophy of religion. It gives poise in a world of change, yields growth without too much mental pain and disorganization, possesses no "fundamentals" to be saved at any cost, and makes possible complete loyalty to the scientific spirit and the values of religion.

The scientific mind would readily accept the responsibility of formulating a religious world-view and ideal on the basis of the new needs, new knowledge, new problems, and new possibilities of the modern world.

What world-view is compatible with a scientific outlook? To venture an answer is not part of our task. To indicate in a sentence or two the scientific mode of

4. Cf. Coe, G. A., *Psychology of Religion,* p. 61.

5. Cf. Case, S. J., *Journal of Religion,* Vol. IV; Smith, G. B., *Journal of Religion,* Vol. V.

approach may be permissible. Man has always endeavored to come to terms with the natural or cosmic powers, to interpret their relationship to his hopes, his values, and his needs. What interpretation of the cosmic order and its relationship to human purposes and values is scientifically tenable? The answer is still largely in the making. No single science can give it. It must come from an inductive and objective study of all the facts yielded by the social, natural, and religious sciences. A wistful yearning for the interpretation that would prove most consoling should not prejudice the fearless following of facts.

What is a scientific conception of the nature of the "salvation" needed in present civilization? What are the highest ends of living? What constitutes the good life today? The scientific spirit demands that ideals be woven from the problems and needs of contemporaneous life seeking larger fulfillment. There is no science of values yet, but one is on the horizon. The trend of current social philosophy is in the direction of employing a scientific method for the determination of human goals and values. Dewey, Otto, Mead, and T. V. Smith are representative of the many scholars who conceive this to be a central task of philosophy. They seek a balanced interaction of aims and means, of things and ideals, of values and technique, so that techniques will become humanized and ideals actualized. The religious person who lives in tune with the scientific temper will be loyal to the ideal and task of religion that is indigenous to the needs, problems, and possibilities of his day.

What attitude toward prayer, worship, and other practices of traditional religion is consistent with a scientific view of life? Since these methods and practices are largely "hold-overs" from a pre-scientific age they need a thorough re-examination if they are to be acceptable and attractive to the modern intellectual. Science has compelled us to relinquish the "grab-bag" idea of religion, to use Fosdick's phrase. Prayer as begging, and worship as adoration, find no place in a scientific world-view. Yet the validity of a refined prayer is thoroughly tenable whatever the world-view.[6] Even though worship forms are considered as symbols, as belonging in the realm of art, they cannot be effective in stimulating or motivating the conduct of a person who has integrated his scientific and theological thinking if they are antagonistic to the accepted facts of science.

The most important implication of the scientific attitude for the practices of religion, however, suggests that new techniques and programs adequate for the achievement of the religious ideal will need to be developed. What these new techniques should be is the subject of another article in this symposium. It is enough to state here that the scientific attitude demands that a thoroughly serious attempt must be essayed to make the religious ideal come true. "To profess to have an aim and then neglect the means of execution is self-delusion of the most dangerous sort. . . . When we take ends without regard to means we degenerate into sentimentalism. In the name of the ideal we fall back upon mere luck and chance and magic or exhortation and preaching."[7]

A scientific attitude toward "human nature" is another prerequisite of the scientific outlook. No longer can we look upon human nature as something inherently fixed and evil. Human nature is essentially plastic and as fully capable of unselfishness and friendliness as of greediness and fighting. One modern philosopher sees a new spiritual renaissance when the old conception of human nature yields to the scientific.

"This conception of human nature as an active, wicked, unalterable essence

6. Cf. Trout, D. M., *Religious Education*, Vol. XX, pp. 81 ff.

7. Dewey, John, *Human Nature and Conduct*, p. 73.

walks with us in the street, works with us in shop or office, kneels with us in worship. It is the major premise of orthodox social, political, educational, and religious theory. . . . If the average citizen can be brought to see that human nature is not something fixed and given, but something mutable and acquired . . . something created out of original capacity and environmental stimuli . . . he will be enlisted in the greatest movement of our time, and will help to inaugurate a spiritual renaissance outranging in social significance any that has preceded it.[8]

II

Perhaps the best way to state our central thesis is to say that the attitude and method of science is a *sine qua non* of effective religious behavior in the modern world. The ends, values, and satisfactions which the religious person seeks are not more important than the scientific attitude and method necessary for both the selection and the achievement of these ends.

Let us look at our problem now from the standpoint of the kind of mental equipment a person should possess if he is to be capable of effective participation in the religious venture. For the purpose of this analysis we may think of the attitudes and abilities that a religious person should embody as falling into two categories: (1) Those ideals, motives, appreciations, and purposes involved in an unfaltering loyalty to the religious venture of man; (2) The more intellectual abilities and requisites for the realization of these purposes and ideals. These two classifications are not distinctly separate or exclusive. In the behavior of the individual, of course, there should be a full integration of the two types of characteristics, "desire" and "intelligence."

Loyalty to the values of the religious venture includes a compelling belief in the supreme preciousness of persons now symbolized in the terms "democracy," "brotherhood," and "love;" a consecration to the vocation of living religiously which is as broad as the experiences of life; the desire to cooperate in the building of a world in which all the resources and institutions of the race will be instruments of the spirit of man.

Our interest in this discussion is in those attitudes and abilities which make for fruitful action and cooperation in the realization of these ends, purposes, and values. It is not enough to cherish noble ideals and worthy purposes; these must be made effective in personal and social experiences, i s s u e s, and relationships. Love without intelligence may be stupid and futile, intelligence without love is often destructive and brutal. Christians believing in good will and love might rally in millions to battle in a holy war against the "pagan Turks." But the man who is trained to secure and analyze facts as a basis for action might find that the "holy" war was in reality an "oily" war. Intelligence, that is, the scientific attitude and method, is essential both in the formulation and the realization of the ideal.

A conspicuous need of the modern religious person is the possession of the scientific attitude and method as the mental equipment with which he approaches the problems, issues, tasks, and responsibilities in every area of human activity and relationship. The development of this *method of adjustment* should be a major objective of the educational enterprise. Some of the considerations which support this point of view will be briefly enumerated in the following paragraphs.

(1) The full release of the creative capacities of the individual d i r e c t e d toward social ends is an essential of social reorganization and improvement. The creative individual is the "growing point" of the social order, "the pivot of reconstruction." With the new view of the possibility of releasing the human capacities for discovery, creation, exploration, and invention "there has grown up some

8. Otto, M. C., *op. cit.*, pp. 238-9.

consciousness of the extent to which a future new society of changed purposes and desires may be created by a deliberate humane treatment of the impulses of youth."[9] To release the creative impulses of the person is to equip him with those qualities and abilities characteristic of the scientific attitude.

(2) The task of religion in building a social order with new relationships and individuals presupposes a type of person who is expectant of change, who will welcome the results of a scientific technique employed in the program of religion, who possesses the ability to undertake his share of responsibility in the intelligent reconstruction of social habits and institutions.

(3) A complex and rapidly changing society makes it difficult, if not precarious, for the adult generation to determine what specific knowledge, ideals, standards, and virtues the new generation will need if the emphasis is placed on conclusions, content, or fixed standards. Such a procedure makes for conformity rather than creativity, for a static social process with the consequent maladjustments multiplied by the radical transformations caused by the material achievements of science. Unless the present practices in every realm of life can be "outrun" the religious hopes and dreams of man are but glorious illusions. Nor can the situations which the next generation will face as adults be foreseen from the vantage ground of the present. The environment is shifting so rapidly that new types of conduct will necessarily need to be evolved to meet the new and unpredictable circumstances. It is not a specific skill or standard that is most valuable but a mode of adjustment, "not knowing what to think but how to think," that will enable the person to attack problems and meet unexpected issues in the most effective way.

(4) Implicit in the foregoing statement is the recognition that ethics in the modern world cannot be grounded on fixed norms, codes, or principles to be "applied" to the manifold concrete conduct situations. Routine habits, moral codes, or abstract principles are workable only when conditions remain the same; they are not applicable to the novel and the unusual.

"Stretch ten commandments or any other number as far as you will by ingenious exigesis, yet acts unprovided for by them will occur. . . . The only truly severe code is the one which foregoes codification, throwing responsibility for judging each case upon the agents concerned, imposing upon them the burden of discovery and adaptation."[10]

The scientific mode of approach to ethical conduct is not normative, dogmatic, or deductive, but is inductive and experimental. Effective moral action in any situation demands the critical analysis of all the factors involved.[11] The scientific attitude and technique for discovering and evaluating facts would seem to be indispensable for moral behavior.

(5) The conspicuous achievements of the scientific mind and method in the realm of natural science and technology have suggested its potential value as the creative mental attitude with which all persons should approach the many areas of their experience, social, political, civic, economic, and "religious." In a highly significant article written over five years ago, Artman proposes that the chief aim of religious education should be to practice human beings in using the scientific method in pursuing the good life.[12] The scientific attitude and method, or creative intelligence, is merely the process of

9. Dewey, John, *op. cit.*, p. 96.

10. *Ibid.*, p. 103.

11. The inductive approach to ethics is stressed in the following representative sources: Bower, W. C., *The Curriculum of Religious Education*, p. 101; Lake, K., *The Religion of Yesterday and Tomorrow*, p. 158; Mead, G. H., *International Journal of Ethics*, Vol. XXIII, pp. 229-47; Smith, G. B., *Principles of Christian Living*; Watson, G. B., *School and Society*, XXVI, pp. 1-4.

12. Artman, J. M., *Religious Education*, Vol. XVIII, p. 81.

thinking in its more thoroughgoing ramifications or applications.[13]

(6) The tragic lag of the social sciences in comparison with the achievements of the natural sciences increases the need today for persons who have a scientific attitude in the total realm of social experience. There is less expectancy of change and less searching for better methods of control in social, political, industrial, and international activities. In these areas of life "dogmas are still supreme," or, to use J. Harvey Robinson's term, we are guided by "lore" rather than by intelligence in all those affairs where human relationships are especially concerned. Perhaps there is no greater religious need in contemporary civilization than a thorough appreciation of the developmental and imperfect nature of all social ideas, institutions, customs, codes, and organizations; an attitude of open-mindedness, expectancy of change, and deliberate efforts through discovery and experimentation to make every phase of the social medium servants of the life of man.

(7) From the scientific attitude should flow such qualities as understanding, tolerance, and sympathy, which are basal factors in diminishing conflicts between persons, groups, nations, and races and in making a co-operative endeavor possible. The truly scientific person understands why a man, a group, or an institution is what it is. And understanding is the key to cooperation.

III

We have attempted to sketch some of the elements in a religious outlook that are compatible with the scientific attitude. It is probably an abstraction to talk about the two as separate. Certainly, in a well-integrated person the religious and the scientific attitude are thoroughly unified. The religious person is a unit with free interaction of social ideals and scientific attitudes.

13. The classic analysis of the thinking process is that of Dewey in *How We Think*. Ch. VI.

The problems of education which grow out of this analysis, though intriguing, fall outside of the scope of this discussion. A few comments, however, are almost necessary to indicate that some of the problems, at least, are recognized.

The extent to which the masses are capable of developing a scientific attitude and method may be questioned. As yet we have no answer to the question. But we may safely say two things. First, a new education and a social *milieu* which is deliberately designed to release and develop creative capacities will undoubtedly bring vastly greater numbers of people to the level of scientific and reflective thinking. Moreover, a scientific attitude of mind, a faith in the possibilities of the scientific method, and a readiness to welcome its achievements in any area of life may be possible even where a large degree of creative skill cannot be developed.

It should also be clearly recognized that the ability to think and work with objectivity, open-mindedness, and creativeness in one field does not by any means guarantee that these will be transferred to all or any other realms of experience. The natural scientist or the historian, for example, may be highly prejudiced, conservative, naive, or dogmatic in his religious, political or economic views.

The social group into which the child is born will necessarily and rightfully introduce him to the highest ideals, standards, institutions, and customs of the racial heritage. But this introduction or induction should not be indoctrination. He should understand that current forms are neither final nor perfect. He should be challenged to participate in the continuous reconstruction of life, he should be given the opportunity and the technique as rapidly as his capacity permits for analyzing, criticizing, evaluating, and reshaping the group standards, customs, ideals, and institutions in the light of his and the race's expanding experience. This is the meaning and the task of all education.

THINKING IN CHILDHOOD AND YOUTH*

WILLIAM H. KILPATRICK†

HOW shall we bring up a child in respect to his thinking, especially his thinking where religion is involved? This question with its varied ethical and psychologic difficulties is the problem before us. Shall I teach my child to think what I think? Have I the right so to do? If yes, what I think now or what I thought at his age? If no, should I then teach him *to* think rather than *what* to think? If yes to this, can I manage it? Can I have him from infancy do his own thinking? And in the end not lose? Such questions as these with all their partial yes and no answers, with all the weal and woe they hold at stake—such questions so considered make up the difficulty of the task facing us.

In an earlier day when reliance on authority as such was more acceptable, our question would for most have been answered before it arose. In that day those in charge must on all important matters teach the young the conduct and views that had been "settled." On that basis everything thought of as education—and with it much not so named—was precisely what will here be called "training" and "indoctrination." As these terms carry in common use varying implications they are placed in quotation marks throughout this paper to indicate that they are used in a special sense correlative of the authoritarian character of the educative process involved: on the one hand authoritative dictation, on the other "docile" (unquestioning) acceptance, both in the hope that the matters so taught might remain settled.

Of course only in special places if anywhere could one find "one hundred per cent" acceptance of such authoritarianism. But in comparison with the present unsettled state of affairs in this country one can easily find times and places and respects in which a fairly unquestioning deference to authority as such has held sway with a like acceptance of its correlative type of authoritarian instruction. Whether as cause or as effect, both deference to authority and authoritarian education ("indoctrination") appear to prevail in any civilization in the degree that social change is there absent.

At the present time there is wide diversity of attitude in this matter of "indoctrination." Possibly most still cling to it, though in varying degrees. Both lingering practice and in lesser degree asserted right and duty illustrate it. "Who owns your child? The state? Do not you?" These questions were asked during the Oregon school controversy. And the answer was given in a question counted to answer itself: "If you don't own your own child, what in the wide world do you own?" Others said, "The right of the parent to select the mental and moral training of the child is fundamental and inalienable—the most primary right recognized by enlightened countries." We need not take sides over the question there at issue to see in these quotations an unquestioned assumption of child "ownership." Admittedly, so runs the implication, somebody "owns" the child in such manner as to carry with it the right to decide "his mental and moral training" and this seems regarded as the necessary correlative of childhood. What if any part the state should have in such ownership might be debated, but a just right to "ownership" somewhere resident in the older generation,—that was not questioned.

It would be a hasty generalization to conclude that the thought content thus held proper for "indoctrination" is lim-

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ited to the field of religion. The "Bill Thompson" attitude toward American history is essentially the same and is held in this country by many who scorn that demagog's antics. Powerful organizations—among which the Ku Klux Klan is simply the most outré—seem at bottom to rest their propaganda interest in our schools on an assumption (by them unquestioned) that all teaching, whether of history or otherwise, is necessarily "indoctrination." With those who think thus it naturally becomes a serious matter as to who shall control the "indoctrination" of our pupils and to what end. On this basis our schools would become pawns in the contests of factions, as children have long been pawns in contests over dogmas.

However, it is not easy to shift all at once from a hitherto unchallenged practice. Many who have rejected the extreme "ownership" and "indoctrination" position now find themselves troubled as they face the consequent changed approach to the moral and religious education of their children. If we do not indoctrinate, so they reason, what hope have we that our children will believe certain things essential to a religious outlook? And without this religious outlook what basis have we for an adequate moral character? In the dilemma thus seemingly fixed many parents face acutely the problem here set for our consideration.

With this preliminary glance at the field let us now come to closer grips with our problem: How shall we bring up a child in respect to his thinking? The inquiry seems at the outset to divide itself into two parts, the one ethical, the other psychological. The one: What is right? What should we seek to do in this situation? What is the ideal? The other: In the situation of concrete realities, how much of the ideal is feasible to be attempted and how shall we go about it?

There need be no objection to considering these two questions separately, even though, as is freely admitted, the ethical and the feasible are but different aspects of the same process. There is, however, more reason than mere facility of treatment for considering them separately. Ideal and obligation, as nearly related as they are, do not cover quite the same ground. The moral obligation of any situation may be, and probably is, properly limited to what is feasible in that situation, but it does not follow that the long-run ideal is to be limited to what is at present feasible of attainment. On the contrary, in the matter of ideals one's reach of vision should exceed one's grasp, else no far reaching program can be attempted. Indeed for best conduct at any time the ideal must exceed the feasible. The call to us is to go as far as we can. Except by trial we cannot tell how far we can go. Our conception of the ideal then should always sketch out more than we can at present see how to attain. On no other basis do we get the best guidance for conduct.

What then is the ethics of our situation? Can we agree on a foundation principle in this matter of youthful thinking? The word foundation is a difficult one and in this region provokes many opinions. This much perhaps most will accept: Whatever else be true our treatment of the young must look to making them eventually able to think for themselves, as able and disposed to think for themselves as we can effect. Differences of application will of course arise. Some will wish to postpone the "eventually' to a late day, others will say, "Why not now?" We may differ also over differences of "native endowment." But with the general statement as made most who read it will agree. Any who do not so agree will probably find little else to their liking in this account. Can we now give this general statement a more specific content?

To think is the essential factor and element of the general statement. Moral life depends on it. When we say "think

for themselves," strictly speaking—as another has pointed out—the phrase "for themselves" is superfluous and redundant. One cannot really think without thinking for himself. But taken in connection the phrase calls attention to the factor of personal and individual responsibility in a social situation. So considered thinking is essential to self-hood, about as essential to self-hood in any ideal sense as any element can well be. On such thinking practical (moral) responsibility rests, since through it alone can the person as such ascertain in any responsible fashion or degree the demands of any situation. So certainly is thinking necessary to intelligent and effectual moral action that no further discussion of the point is needed.

If such thinking is to be reliable and useful it should, as far as possible, be based on a fixed technique independent of the particular merits at issue and should proceed in independence of prejudice. By the comparison and criticisms of actual instances of thinking it becomes possible to improve our technique of thinking, to locate and define prejudice in such a way as to help us to get loose from it, and thus in the end to get a clearer ideal of a type of thinking that shall be free from all such blemishes. This resulting ideal of unwarped thinking we wish especially to set up as an aim and effort in the matter before us. It is well to be reminded that the kind of thinking here considered is really an adventure into the unknown. Thinking that merely repeats past conclusions ceases to be thinking and becomes instead automatic conduct. Thinking in any full true sense is the process of finding the best way of meeting a novel situation. Any region not fully explored may afford opportunity for true thinking. And the result is always an adventure. The outcome cannot be foretold. Emerson well said, "Beware when God Almighty turns loose a thinker." In lesser degree but still in a true sense the warning holds of any instance of real thinking. It is exactly this uncertainty that troubles those whose greatest fear is for the fixedness of what is, for the safety of vested interests of any kind, whether of property or of propriety or of doctrine. If people are allowed to think "freely," there is in fact no telling what they may conclude. And the perturbation of those apprehensive produces a characteristic result. The less inherent security any situation has to offer for a vested interest, the more inclined are the interested ones to fear for the outcome and in their fear to search for authoritarian support and to shun an untrammeled and unbiased inquiry. And they are in their day and generation right. Thinking is a hazardous adventure. It cannot be trusted to see things only in old lights, still less in prejudiced lights. The only real safety then is in preferring truth to vested interest. We must stake all on free inquiry. Our reliance thus is on thinking and our hope is to make it so reliable that we may trust its new disclosures.

But this discussion of thinking does not settle our problem. Many will agree with all so far said, yet feel the essential difficulty untouched. If my cherished doctrine will not finally stand the test of criticism, these will say, then I invite your criticism and I agree in advance to follow the argument at any cost. I will have the truth whatever it be. But, they will go on to say, I shall not give up my position on any shallow examination, least of all am I willing, when so much is at stake, to trust my child *in his immaturity* to the alluring sophisms of plausible but shallow students of life. My love for my child compels me to protect him till he is in fact able to think for himself. When that time comes I shall turn him loose, as indeed I must, but with the hope that by then his character will in the main be settled and his mind strong enough to make his thinking and his consequent conduct both reliable and defensible.

With such feelings every parent must

feel sympathy. Children are so docile, so trusting, so little able to detect fallacies, so easily led in argument to give weight according to personal love and trust, and there is in these matters so much at stake that every parent will feel responsibility for a just protection. But what protection is just and how shall we contrive to secure it? These are matters not easily settled, certainly not by a sentimental preference for our hitherto cherished views which makes us oblivious to a higher duty both to truth and to our children. We accordingly must call a sharp halt to any sentiment which would, under the guise of child protection, give *carte blanche* to any parent or group of parents or any adult organization whatever to fasten in their young any cherished belief which they in their prejudice happen to think necessary.

So important are the matters here involved that we must examine them more closely. First of all, it is abundantly proved by history that early training efficiently directed can and does so fasten so firmly in the young our doctrinal positions, social, economic, religious, racial, nationalistic, that thereafter under all ordinary circumstances the bias so produced remains for most an effectual warping throughout life. Only the exceptional cases rid themselves of such "socially inherited" biases. If any doubt this conclusion it is only necessary to ask how many in this country are Democrats and Republicans in conformity with their early home and community environment, how many in their church connections have followed their parents, how many, whether within or without the church, still maintain the prejudiced attitudes of their parents toward opponent groups, how many Southern Whites differ, say, from the French in their attitude toward Negroes. A fair study of the different and opposed reactions provoked by such words as Jew, Negro, Nordic, Catholic, Ku Klux, Al Smith, Jeff Davis, will show the depth and pervasiveness of early biases. If more be needed to convince, study the arguments advanced in defense of these prejudices and note the opposed gullibility on the one hand and the unquestioning rejection on the other which such arguments respectively meet. The possibility and strength of "indoctrination" is abundantly proved.

In all of this, be it noted, success at "indoctrination" is no guarantee of validity of doctrine. Opposed sides of the same doctrine lend themselves to the process with seeming impartiality. "Indoctrination" in trinitarianism (among Orthodox Christians) is thus offset by "indoctrination" in unitarianism (among Mohammedans). Nearer home hereditary Republicans offset hereditary Democrats, hereditary Catholics can be matched by hereditary Protestants. Wherever we find opposed doctrinal positions following family lines and regional boundaries we may be fairly sure that it is "indoctrination" and not reasoned connection that (on one side, at least) has produced the effect. Indeed the wide prevalence of these continuing family lines and group boundaries in doctrinal oppositions almost cause us to question whether anything but "indoctrination" can be the rule. In any event, it is abundantly proved that success at indoctrination is no guarantee of validity of doctrine.

We may sum the discussion to this point by concluding (i) that it is possible to "train" and "indoctrinate" a child in some factional or sectarian position in such fashion and degree that under ordinary conditions when he is old he will not depart from it; (ii) that success in this is no guarantee of the correctness of the position; (iii) that from a study of history the parents' belief in their own rectitude is likewise no guarantee of correctness of position. But this is not all. Without necessity of argument we may further assert (iv) that parents and other elders have often managed to use the

child as means to the end of upholding some faction or dogma dear to their hearts. We need not impugn motives. The fact remains unshaken. In the light of all this it is then finally submitted that intentionally so to "train" and "indoctrinate" is (v) to violate fundamentally that respect for the child's personality essential to ethics and is besides in probability (vi) to do the child a positive disservice as he faces a civilization changing as never before. The last two indictments we shall now examine.

Under whatever terms we may choose to describe the position, "respect for personality" seems about as close to a fundamental principle of ethics as study has been able to find. The essential dignity and worth of human individuality and our obligation to develop and respect it in each other,—these assumptions practically underlie all modern discussion of ethics. Harnack expressed the same thought when he found the essence of Christianity in the idea of the "infinite worth of the human soul." Kant expressed the same idea in his "kingdom of ends," that we should treat humanity always as an end and never as a means merely. The same was implied in what was said above about getting each child to the place where he can and will think for himself. We may say it a little more elaborately by asserting that ethics demands such respect for personality as means the continued development and expression of each to the fullest degree possible in reciprocal relation with others. An essential constituent of this is a self-direction that respects a like self-direction in others. Such growing of all together is the highest duty. The conception moreover tests all social doctrines and institutions. Those, like the Sabbath, were made for man and not man for them. Everything we uphold must meet the test that it make best for the growing of all together. From all this it seems clearly to follow that there is no higher obligation than so to educate a child that increasingly he can and will think for himself reliably and ethically. In particular we must conclude that normally the child shall eventually arrive at the place where he can and will review what he has hitherto heard and believed and will subject it to the most searching and unbiased analysis and testing of which he is capable. If, contrary to this, we by our teaching so indoctrinate a child that he either cannot or will not think thus freely for himself, then we have not really or effectually respected his personality. We have instead enslaved him in fact to us and to our way of thinking. If we have done so knowingly and intentionally we have then in this respect and to this degree willfully used him as means and not as end. We have used him as means to the support and perpetuation of a doctrine or faction which we have valued above him, above the development of his free personality, and above the hope and opportunity that he may improve over our thinking. To trust to the personality we are helping to build and thus to prefer the outcome of his fresh examination to the insight we have hitherto had requires great faith and deep conviction; but nothing short of this can claim to be proper respect for the personality for whose growth we as parents are so peculiarly responsible, or proper regard for the society in which he is to live and act. Intentionally to "indoctrinate" seems a clear violation of our deepest ethical insight.

But this general ethical consideration is not all. Times are changing. To build then a static outlook on any point may prove a hurt. While changes have always been going on, the present seems unique in that change is not only much more rapid now than ever before but it promises to become still more rapid. This fact of unique change sets a new and unique task for education. In the remote past social change was so slow that it was thus easy to think of education as properly a

handing down from father to son of the unchanging social inheritance. Under such conditions "indoctrination" was all but inevitable. The more surely and precisely youth got its lesson, the more surely and precisely could it be applied. But the outlook now is different. Youth faces a changing future, a future which is in many, many respects unknown. To learn then in a static and unadaptable fashion may mean inability to adjust to some very significant change. The results may be tragic. Ability to think for one's self is thus essential. Without it intelligent adaptation to change is impossible.

The moral situation seems here to demand peculiar consideration. The official guardians of society's morals have hitherto quite frequently held a philosophy highly antagonistic to the idea of change. They have accordingly been unwilling to recognize the need of adaptation in the matter of morals. But new situations have been arising with new moral demands. The automobile, for example, has introduced a host of demands which our morality is slow in rising to meet. There is great danger that moral outlook and habits too often adjusted to mere surface details will lag hurtfully behind the changing social situation. The situation is made worse by the further fact that the same guardians have quite generally taught morals on a taboo basis, surrounding the whole matter with mystery and fear. Where the taboo system succeeds it tends to make difficult the shift of a person from one type of community and moral situation to another. On a taboo basis of morals the thinking necessary upon such a shift is at times almost impossible. And, saddest of all, where the taboo system fails it tends to break down altogether.

But this yet is not the whole story. Our youth increasingly refuses to accept authoritarian morals. To the consternation of many, it demands the why of right and wrong. In a former day it might suffice for the parents to say, "The Bible says so," or "The church so holds," or "It simply isn't so done in polite circles," but that day has largely passed. For weal or woe, youth asks why; and if a satisfactory why be not forthcoming, it tends to think there is no sufficient why. In any event, it wishes to take affairs into its own hands. We are forced thus to put morals on an intelligent and "why" basis or run the risk that the rising generation will have no morals at all. The why must be so seen and so accepted that it can hold fast amid change. Mere habits, however good, will not suffice. The reason why must be enthroned. No type of authoritarian morals finds sufficient acceptance to meet the need. Difficult though it be, it is perhaps especially in the realm of morals that we cannot afford to fail in preparing our children to think eventually for themselves.

From whatever way we view the ideal to be followed in the management of children and youth the conclusion seems the same. "Indoctrination" is a fundamental moral infringement and a dangerous moral practice. We should do our best to teach our children really to think.

At this point a more detailed definition of the term "indoctrination" may prove helpful. "Indoctrination" necessarily implies implanting a position on some doctrine. The process in the bad sense used throughout this paper is opposed to education of the best kind both in the manner in which it is conducted and in the outcome likely to result. As regards manner, education becomes "indoctrination" in the degree that what is taught is taught on other than the merits of the case seen and accepted as such by the learner. As concerns result, education becomes "indoctrination" in the degree that the learner becomes thereby indisposed and unfit later to reconsider the question on its merits. As regards intent, in the degree that steps are taken to produce such an unquestioning outcome and attitude, in like de-

gree may we say that the "indoctrination" is intentional.

With what may be called the "ideal" demands of the situation thus definitely before us, let us now face the "feasible." At once many will agree that "in the end" the child must think and decide for himself, but will say that it is not feasible to put all his education from the beginning on this basis and therefore that parents are not only justified in teaching their children what they themselves think, but compelled so to do. "Indoctrination" these will conclude is therefore inevitable. There is so much truth in this that some readers will be disappointed in the conclusions about to be drawn. What are the facts as to procedure and what shall be done about them?

Is "indoctrination" then inevitable? The answer in the judgment of this writer is mixed. It is both yes and no, yes as to partial fact, but no as to intent. In some measure "indoctrination" is inevitable, but l i c e n s e is not therefore granted. To some extent "indoctrination" is the inevitable accompaniment of growing up in the particular environment. Do what you will to prevent it, much "indoctrination" will none the less ensue. Each specific environment will necessarily carry a certain amount of its peculiar indoctrination. Does it, therefore, follow that parents are justified in conscious and intentional indoctrination? The answer is no, it does *not* so follow. Because we cannot avert all of an evil it does not follow that we are therefore licensed to increase the evil. If indoctrination, in spite of being an evil, proves very difficult of control, the greater reason for giving attention to the problem. What can be done and how shall we do it?

It requires no little consideration to see that the younger the child the less can we hope to put his learning, his acceptance of what he learns, on a basis of full and impartial consideration of the merits involved. He must build habits of regular eating and sleeping, to mention no more, before he can weigh the merits of these practices, months and even years before. We who are in control must meanwhile utilize the laws of habit formation to his good, so far as we can ascertain it. But this conclusion regarding the process of the child's early education in no way lessens the parental obligation to know all that is happening and to reduce "indoctrination" to the smallest feasible compass, in particular to avert it as an abiding result. We shall, as early as we can and as much as we can, teach the "why" of all that is taught. When little brother pulls little sister's hair, he should, as soon as he can learn it, associate how little sister feels with his learning not to pull. We have to begin in bare parental control, but we do not have to stay there. Not all of the golden rule can be taught at once and we need not wait for full understanding before building habits of regard for others. The "what" in actual habit of conduct need not wait hurtfully for the "why." But at no time shall we so teach the "what" as to prevent the later fair consideration of the "why." The general statement seems thus easily concluded. I shall teach the actual habits required in life as the need arises, taking care always that the accompanying attitudes are the best attainable. In connection I shall teach as much of the "why" as I feasibly can. At the first this "why" part will be exactly nil. Beginning later the "why" will from then on receive more and and more attention. When sufficient growth has been attained, but as early as feasible, the "why" of the previously learned "what" will be brought to the bar of attention. At all times the aim will be the earliest and fullest measure of thinking compatible with other just demands of the situation. In no case shall we allow any doctrine to be enthroned even approximately beyond recall, especial care being here given in the matter of our own cher-

ished beliefs. And we shall avoid as much as we can commitment to doctrines on any authoritarian basis, early efforts at suspended judgment being encouraged and opposed positions to our own being often suggested. Our consistent aim shall be not only to avoid indoctrination but to build positively against it.

Certain difficult cases deserve special consideration here. What, if anything, shall I teach about God? What shall I do with the Bible? What shall I do about authority in morals? Just here many will ask whether there are not some things so well settled by the experience of mankind that they can and should be taught once and for all, and as fixedly as we know how. It is impossible not to feel sympathetic with this position if it be moderately held. Honesty, truth-telling, courtesy, a golden rule consideration for others, for example, would seem sufficiently authenticated to be taught with assurance. So much we may grant, but there appears from it little or no justification for "indoctrination." If experience has been obvious enough to settle these matters for the race, the like experience will be available to help teach our children. The beginnings of honesty may well be laid in authority, but the "why" of it all is so obvious that from teaching considerations we should wish to use it early in the process. With increase of experience the more subtle aspects of honest dealings should receive attention, otherwise plausible dishonesties may go unrebuked. But all this is exactly to say that we are not to teach honesty on a mere "indoctrination" basis. Something much better is both possible and necessary. The rub will come when some will wish to include among the "settled" matters doctrines that are still controversial. This is to be expected, but no less to be resisted. The itch to "indoctrinate" assumes many disguises.

The matter of authority in morals probably gets its importance in this connection from an assumed theory that all learning normally takes place only as the learner accept the thing to be learned on the dictum of someone else taken as authority. It need hardly be said that such a conception of how learning takes place finds little acceptance with students of the subject. It is quite true that the authority of teacher or parent may bring about the practice necessary to fix some matter of learning. But if so it is the practice, not the authority, that brings about the learning. It is further true that the word of the teacher or of other authority may give some item of learning such standing and acceptance that it will accordingly become in time well fixed in the learner's mind or character. But if so it was the actual acceptance (along with practice) that did the fixing. The word of authority as such is not necessary to such acceptance. On the contrary, personal experience gives as a rule better and more wholesome acceptance and in so far brings quicker and sounder (more moral) learning than does the "say so" of any one else. Certain older theories of ethics did found the basis of right and wrong in the authoritative will of God, and many seem to think that all morals must be so taught, but so far as appears this position is now seldom or never upheld in our better institutions of learning. We conclude that the practical authority of parents and teachers may play a proper part in the moral nurture of the young, but that this is a very different thing from enthroning authoritarianism in the very heart of the learning process. Morals are to be learned in the same ways as are other things.

What to teach about God and the Bible turns partly on the question of authoritarian morals. That early morals can and often should be put for the time on an authoritarian basis may well be admitted, but what about older children? There was a time in the not remote past when youth accepted authority in morals,

at least intellectually, but, as has already been said, that day seems past. The general spirit of questioning has descended from scientists to adults in general and thence in turn to young people. With the general spirit of inquiry abroad in the world it seems the height of unwisdom to attempt to found the morals of our children on a basis that will not stand the test of inquiry whether this be the authority either of God or of the Bible. The old doctrine of plenary inspiration is now thoroughly discredited, as likewise are the older anthropomorphic conceptions of deity, so that any building on them is positively hazardous. So probably will such a foundation later crumble that it is difficult to see how any intelligent and informed parent will be willing to risk his child's future to such a procedure.

Apart from authority in morals what shall we teach about God and the Bible? So far as this writer can see the general considerations urged in this paper apply here as elsewhere. We should not only avoid "indoctrination," we should build positively against it. But some special dangers need to be considered if any reverence for religion is to survive on a defensible basis. First of all we should deal fairly with our children as to the authority of the Bible. Some seem to think they may with impunity teach outworn theories to the young in the hope that they will safely outgrow them. To do so is to risk the confidence of our children in us and in our essential rectitude. We cannot afford such risk. The inherent psychology of the Bible is extraordinarily true, but much of its history and most of its science is not true. We must be truthful to our children. Similarly with the miracles of the Bible, it would seem much better to tell our children from the first that people used to believe such things but we now do not.

What to teach about God is perhaps the most difficult question of all. There is such wide diversity as to what is finally true that we may expect any specific position we teach later to be questioned, and the more dogmatic the position the more surely will it be questioned and the more likely will it be rejected. We certainly run a very great risk if we teach a God whose moral standards are lower than those now commonly accepted among men. We cannot then in wisdom teach the god of orthodoxy. The risk is too great. Whatever we do teach we should teach with due regard to the uncertainty involved. Not to do so would seem an immoral proceeding.

What about teaching religion? If possible this is even more difficult to answer than about God. It is a rash prophet who says that man will eventually reject religion. History, so far as I can read it, is against such a prophecy. We do, however, seem not rash but wise to exact that increasingly religion will base itself, in the words of Sabatier, not on the authority either of book or of church but of the "spirit," the way it works when we try it. If so, it behooves all who believe in "spiritual" values to found them on this rock of experience and not on the sands of tradition, however hallowed this may be by association.

To trifle with the welfare of our children is the thing furthest from our wishes. The condition that faces us is serious. We dare not gamble away either our children's confidence in us or their interest in the "spiritual" values of life. We surely do both if we teach them as true what they later must dismiss as false. It may be—who knows to the contrary?—that the truest and most helpful thing we can finally teach our children is our own uncertainty with our deepest insight as to what is at stake—these along with the best methods of attack the world has yet devised. If we do this we have at least been honest with them and with ourselves. Honest doubt, sincere yearnings, method of attack,—these three have worked wonders in science; why not here?

RELIGIOUS CURRICULA AND SCIENCE

ANGUS HECTOR MACLEAN*

IS science to be recognized as one of the great sources of knowledge for the development of the religious life? If so, it is incumbent upon teachers of religion to ascertain the present relation of science and religion. This task involves the raising and answering of many questions, but three questions are particularly urgent:

1. To what extent does current religious education recognize and utilize the findings of science?

2. To what extent does religious education tend to develop that complex of mental habits and attitudes known as the scientific spirit?

3. To what extent does it prepare children to live religiously in an age in which the sanctions of science are supreme?

It is the purpose of this article to attempt an answer to these questions from the standpoint of curricula now in use in schools of religion. The writer does not claim intimate acquaintance with all text books published. Between sixty and seventy courses of study have been read, and such statements as are made are based upon this reading.

The difficulties met with in trying to make any brief characterization of existing curricula are legion. What is true of one textbook may not be true of any other in the same series. What is true of chapter I in a text may not be true of chapter II. What is true of most texts in all series may not be characteristic of any one of them. Obviously, then, it is difficult to make any generalization that is not open to question. An effort will be made, however, to make only such statements as can be judged on the basis of the reference given.

The issues in the no-man's land of the present religious-scientific war involve particularly the creation of the world and of life, God's participation in nature, the attitude towards the Bible as a whole, the interpretation of biblical narratives, the sources of moral and religious knowledge, and the nature of religious experience. Upon all of these both science, taken in the broadest sense, and religion have made definite pronouncements. What do those who have taken upon themselves the responsibility of giving guidance to teachers of religion have to say on these and similar questions?

A

CURRICULA IN THE LIGHT OF SCIENTIFIC HYPOTHESES AND FACTS

I

The point on which there seems to be the most widespread sensitiveness in religious curricula to the pronouncements of science is the question of the origin of the world and the life thereon. To what extent have the teachings of science on this subject been incorporated in religious teaching?

The versions of the creation story range from the literal, or near literal, interpretation of the first two chapters of Genesis, to the planetesimal hypothesis of Chamberlain. The biblical versions are found in such texts as *Every Day Lessons in Religion,* published by the Abingdon Press,[1]* and *Bible Stories for the Sunday School and Home* (Course I) in the Berean International Graded Lessons.[2] In these stories are found the most elemental modifications of the original narrative. God's "Let there be . . ." occupies a conspicuous place, all forms of life are called into being fully developed, the human male is created apparently for no particular biological

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*Footnote references to literature are grouped at the end of the article.

purpose, woman being an afterthought, the waters of the earth are represented as being gathered all together in one place, etc. The limiting of the creation of life to the space of a few days, however, is omitted, and so is the conspicuous part played by Adam's rib in the creation of Eve.

The same version is found in *Trust in God*,[3] a first grade course in the Christian Nurture Series, but a modernized story of creation is added which is worth quoting.

"Once upon a time in every place through the sky where we now see the sun shine and the moon and the stars shine at night, there was nothing but whirling star dust. Have you ever seen an automobile driving by and fill the air behind it with little particles of dust that look like smoke? Well, that's what the whole world was full of, and God set it whirling and dancing and made certain little particles of star dust come together, and built up a lot of little round balls that we call stars and worlds. To each of these God gave a certain path to follow, and it never gets out of the way, and never bumps into another star."

In a primary text in the Beacon series[4] a somewhat extreme position is taken. According to this text no one knows anything about creation and the origin of life, though everyone would like to know. The story of Promaetheus is told, and care is taken to tell the child that the story is not true. Apparently nothing more enlightening than this ancient Greek myth could be found.

In a primary text published by the University of Chicago Press,[5] a real attempt is made to introduce the child to the problem and mystery of creation as faced by modern scientists. Various theories are given, the primitive view in connection with which the Hebrew story is mentioned, the Copernican theory, the nebular hypothesis of La Place, and, finally, the hypothesis of Chamberlain. The fact that the authors of this text believe the scientific view should be given to children prior to the Genesis stories sets the book in a class by itself, in so far as this particular lesson is concerned.

A point of special importance is that in every one of these texts some hint is given of the unreliability of Genesis as a source of either historical or scientific knowledge. In the International text[2] referred to, a note to this effect is included for the enlightenment of the teacher, but not expressly for children. In the Abingdon text[1] the story is called "a beautiful poem" without further comment. The Christian Nurture text[3] makes a particular point of enlightening children as to the unreliability of the narrative for the purposes mentioned, though children are advised not to criticise the story. All insist upon the great religious truth contained in the story, namely, that it *was* God who did start things in the beginning.

A discussion of the creation story in *The Story of Our Bible*,[6] published by Scribner's, begins with, "In these days we instinctively turn to science for answers to such questions. Formerly it was the universal custom to find the answer, if possible, in the Bible, etc." Then follows an analysis of the backgrounds of the biblical narratives, showing the great moral contributions made by the Hebrews to these "old world tales."

What is the significance of these materials for eduction in "a scientific age"? The treatment of the question is fragmentary, distorted, inaccurate, and incomplete even if the materials found in all the texts read were brought together. Many children taught by means of this type of material will have much to unlearn. One of the chief criticisms that can be made is the wholesale omission of relevant scientific information. Even the lesson on creation in the text by Chamberlin and Kern already spoken of neglects entirely the theory of progressive development from lower to higher forms. The text under discussion betrays its lack of interest in scientific thought in the very next lesson, following the one on creation, in which the story of the

loaves and fishes is given as something that really happened. The modernized story quoted from the Christian Nurture text is pathetic. There is little to be preferred in a picture of God setting dust particles to "spin and dance" over the classic picture of man being formed out of the dust of the earth.

Has there, therefore, been any appreciable advance? Perhaps the churches depend upon the public schools for giving children scientific information. Some such division of labor is undoubtedly necessary, but when the church, for example, adds the assumption "In the beginning God . . ." to the scientific version of creation, is it not necessary to interpret God in modern terms? Is it enough to say that it was God who set evolution going? God is still on the outskirts of creation, manipulating a universe without being in any sense inherent in it. Such liberalizing of the old story as is current will help the child to welcome the teaching of science when it comes, but will it help him with the religious interpretation of evolution?

II

A great deal of nature study is included in Sunday school literature. With what regard for the facts of nature is this study promoted?

It would be difficult to label the various elements in this teaching as either true or false, but many points made are open to question. For example, the idea is emphasized in some texts that all nature was called into being for the express purpose of satisfying human wants. The bulk of the nature teaching gives this impression, but explicit statements are not uncommon.

"Every blade of grass is a present from God; he wants you to enjoy every plantain, every banana, every peanut, every cocoanut. He made them for you."[7]

"God created fish and birds and cattle and all living things so that the earth might be a wonderful place for his people," etc.[8]

That there is truth in this goes without saying, but how can this teaching be given without recognizing also that he made the deer for the tiger, and the lamb for the wolf and for the shepherd's table?

Is it not the spirit of the true naturalist to recognize the lower forms of life as primarily ends in themselves? If we are to teach lessons in nature is it not essential that this simple fact be recognized?

In many texts God is wonderfully good to the birds and bees; they are objects of his care as are humans. But even here the manner in which this heavenly care is bestowed causes difficulty. He teaches the worm to spin its cocoon,[9] He whispers in the ear "of each little squirrel" that it is time to go and gather nuts,[10] He provides food and protection for every living thing,[11] particularly the pretty, nice, and harmless things. An inexperienced child can scarcely escape the impression that every little creature is perfectly safe in the "Heavenly Father's care." Nothing is said of the darker side of life which every woodland child knows, and which all children will know sooner or later, namely, that the sparrow's food is the worm, and that the owl's food is the sparrow, etc. One can approve of the teaching that God provides the birds with feathers to keep them warm,[12] but can he have the same respect for it when the equally true fact that thousands of birds, for example the Scarlet Tanager, die annually from exposure is entirely overlooked? One might be ready to agree with the idea that God guides birds over land and sea during migration,[13] but when the fact that the order God has ordained allows them also to get lost in storm and fog and fall into the ocean from exhaustion is omitted, the teaching does not seem to be quite so true to fact.

A half truth frequently amounts to a falsehood. This is how any fairminded

person must characterize Sunday school nature lessons. If we cannot tell the whole truth in a way that is consistent with the power and character of the kind of God we wish to believe in, why attempt to use what looks like nature faking to magnify his goodness? Is it not obvious that the current idea of God must be modified, or that nature lessons must be excluded from the curriculum?

Two courses of study revealing more desirable tendencies with respect to nature are the somewhat over-spiritualized Beacon text, *God's Wonder World,* and *Our Wonderful World,* recently published by the Abingdon Press. In these texts some real nature teaching quite in keeping with fact appears.

Teaching about God's relation to the natural elements, such as wind and rain, in which these forces are seen to be instruments of God's beneficent good-will[14] is also open to severe questioning. That they destroy life is not mentioned, though there is sufficient evidence that children frequently conclude that when the storms kill they are expressions of the wrath of God.[15]

III

Another question that can be asked with reference to the treatment of scientific fact in curricula is, to what extent are the results of scientific research in regard to the Bible reaching children?

The question is difficult to answer because of the common use by both liberal and conservative writers of conventional phrases such as "The Word of God," "Inspired," "God told him," etc., etc., the exact meaning of which is not always easy to determine.

In some texts there is little doubt that the intention is to induce children to think of the Bible *per se* as the word of God. Something very like the old proof-text method is still current. Only a few samples can be quoted here.

"The word of God shall stand forever." "Many have tried to destroy it, but the promise of our text has never failed."[16]

One author makes a statement and then asks, "Would you like to know how I know that? Read Rev. 15: 3 and 4."[17]

"It might need a whole lifetime to tell all the stories in the Bible, to write down *every one of God's rules for living.*"[18]

Other interpretations are illustrated by the following quotations:

"We should respect other people's Bibles as we want them to respect ours." "The Bible is sacred because it contains the most important teaching of our religion."[19]

The Bible is one of God's ways of speaking to us, and "has a message different from all others."[20]

"The Bible is a book from God as any other good thing is from God. The Bible came in a natural way like trees, and is from God as a tree is from God." "If there is anything in the Bible that is not true, I think we ought not to say that it is from God."[21]

The texts which contribute most to the modern understanding of the Bible are for the most part published by the Beacon Press, the University of Chicago Press and by Scribner's. Special reference might be made to the works of such authors as Corbett, Soares, Hunting, and Buck. These authors all recognize the Bible as a record of growing religious experience, and are apparently anxious to have this fact specially[22] impressed. The work done by these and a few others in the modern interpretation of the Bible cannot be given due justice in a brief analysis such as this. On the other hand it can easily be over-estimated. Although these writers speak of Abraham, Moses, Gideon, and others as acting on the "promptings of conscience," or from "conviction" rather than in obedience to direct, face to face commissions from God, they slip continually into the old phrases such as, "The word of the Lord," "God said," "What other sign did God give?" etc., so that it is difficult to estimate what the cumulative effect upon children is going to be. Perhaps the

greatest service rendered by these authors is in the interpretation of so-called miracles in the Old Testament. For example, the plagues[23] of Egypt are accounted for as due to natural causes, and so are the experiences of the Hebrews in the wilderness. Many miracle stories are frankly called traditional and attempts are made to get at their sources.

A point of interest is that there seems to be far less freedom in dealing with miracles supposedly wrought by Jesus than there is with stories of similar character in the Old Testament. For example, H. W. Gates deals very liberally with such subjects as the giving of the ten commandments in *Heroes of the Faith,* a text in the Scribner's series, but in his *Life of Jesus* (Constructive Series) he does not even question the possibility of turning water into wine. The course on Jesus by Florence Buck (Beacon Press) is an outstanding exception.

But when we turn attention to biblical interpretations contained in by far the greater number of our text books, we find teachings that will startle any moderately scientific mind. In teaching God's "care of his own" the story of Elijah being fed by the ravens is repeatedly used.[24] The story of Daniel in the lions' den also serves this purpose in many texts.[25] Perhaps if we are generous enough to hold to the possibility that Daniel was a natural born lion-tamer, we can still find a place for this story, but when we are told of Hebrew boys walking in a fiery furnace without as much as having their whiskers singed[26]—well, just where does this teaching stand in "an age of science?"

The stories of old time religious experiences are equally interesting. God communicates with man by talking with him face to face. "So Moses went up to the mountain with God. He had talked with God for so many years face to face as one friend talks to another that it was no new and strange thing that he did that day."[27] God is represented as directing human activity even to the minutest detail. He gives directions to Cornelius for finding Peter,[28] to Ananias for finding Saul,[29] to Abraham's servant when he seeks a wife for Isaac, etc. He gives a blue-print of the ark to Noah, "God told Noah just how to make the ark,—how wide, how long and how high."[30] God communicates with man **through** dreams,[31] signs,[32] visions,[33] angels,[34] etc. A few writers represent face to face relations of God and man as true to fact in ancient times but not so in the modern world. In other words, God has ceased to intervene so directly in human affairs.[35]

There is so much of this brand of material in our Sunday school literature that the significance of it in an age of science can be closely estimated.

The teaching that conscience is a reliable guide to moral conduct receives almost universal emphasis,[36] but there is a corresponding lack of teaching to show the place of experience in the making of a conscience.

Downing's *The Third and Fourth Generation,* a study of heredity, published by the University of Chicago Press, is the most thoroughly scientific piece of work read. Its nature and spirit is so different from the bulk of our teaching that it seems out of harmony with the teaching of the church. The attitude is entirely non-theological. It is interesting to compare this treatment of heredity with other references to the subject such as this: "The narrative impressively shows how sin, having once appeared, became hereditary in the human race."[37]

So much for the relation of Sunday school teaching materials to the world of fact. How do we stand?

B

WHAT CAN WE HOPE FROM OUR CURRICULA IN THE WAY OF DEVELOPING SCIENTIFIC MINDEDNESS?

Some of the churches, as the Protestant Episcopal and the Presbyterian churches, make no secret of their intention to teach

a theology. What the child should know is pretty well determined, and, in the Christian Nurture series, adhered to very strictly. Here little change in the theological teaching as we go from grade to grade can be observed. Can a dogmatic, theological approach to life have a place in teaching for a scientific age?

The more liberal studies offer little to be desired over these with respect to dogmatism. There is merely a change from the dogmatism of the church to the dogmatism of theologians and non-theologians of widely differing views. That there is no appeal to reason and experience cannot be said, but few vital questions are raised, fewer still are left open, and scarcely ever are widely differing views presented without a weighing of the evidence in favor of some view. One cannot escape the impression that certain assumptions are not to be questioned, e. g., that God did appoint the sun and all natural forces,[2, 3] and that God's love has been proved too often to be questioned.[38] Can dogmatism of any sort be used to develop open-mindedness?

There are other factors which many would consider as damaging to the development of scientific-mindedness.

1. The universal emphasis upon obedience, and frequently unquestioning obedience:

This emphasis belongs to the days of despotism and of a revealed and literally inspired word of God; yet it persists today despite our uncertainties as to what God's will is.[39]

2. Practices tending to the evasion of issues:

(a) There is first the extreme use of the third person, or so-called historic method. One grows weary of the phrases, "So Moses thought," "were supposed to be," "So the story says," etc., when some of the greatest issues involving morality and scientific knowledge are overlooked.[40] By this means an author can lay it all to Moses without committing himself in the least.

(b) Another type of evasion is the representation of difficult passages as poetic representations of ideas quite in harmony with the modern mind. The first chapter of Genesis is a poem,[1] and so are the stories of the birth of Jesus poems, and were intended to be such.[41]

Here is a particularly interesting statement: "It may occasion difficulty to some readers that Jehovah is presented as planning deception and that a lying spirit is described as amongst his messengers. This is only a poetical way of teaching the existence of the overruling power of God."[42]

(c) If any series of texts can be said to have ear-marks, the Beacon Press can be identified by the spiritualized interpretations of difficult stories. Elisha saw Elijah ascend to heaven "with his spiritual eyes."[43] Moses saw a "spiritual divine fire in the bush."[44] A miracle of healing is interpreted thus, "What Peter did was to instill courage to awaken in the beggar the joy of living."[45]

(d) Generalizations of a sweeping character also help to obscure real difficulties. One author, after vaguely referring to the great truth in the "poetic" nativity stories, cannot find anything better to represent this truth than the following, "The existence of some celestial commotion over a terrestrial event of the highest consequence to man."[46]

(e) Sometimes the p u r p o s e of a study seems to limit the discussion of issues. With reference to Joseph's dream interpretations we have this, "Of course we naturally ask how Joseph could know these things. But we can only say that it is a part of the story and our interest is in finding out just what these wonderful old tales of the heroes have to say to us."[47]

(f) Issues are frequently postponed because they are regarded as too difficult for the grades concerned, but when we find this excuse persisting right through the high school, as in the Constructive Series, for example, we wonder whether

the question of difficulty is the real cause.

(g) Emphasis is given to minor questions involved in a lesson with complete disregard for the fundamental issue. A sample is the raising of questions about Jesus' curt reply to his mother at the wedding feast, and whether or not he countenanced the use of wine, while the question of historicity of the story is not raised.[48]

(h) Minimizing the importance of miracles. For instance the feeding of five thousand from a small boy's lunch basket is, according to one author, not nearly so wonderful as the laws which govern the growth of seed to make food.[49]

If the above observations are accurate, what influx of the scientific spirit can be expected as a result of these sorts of Sunday school teaching?

The above does not represent the entire situation accurately. A more encouraging note can be sounded. Some of the very recent textbooks and discussion courses indicate an entirely new tendency which is altogether in favor of scientific mindedness. Among these might be mentioned the publications of "The Inquiry" for use with young people, such as *Why the Church?* and *How we Make up Our Minds on International Questions,* the project studies by Shaver and others, published by the University of Chicago Press, *Case Studies for Teachers of Religion,* by Goodwin Watson, etc. These publications represent an entirely new attitude towards life and religion. Unfortunately, they are largely for adolescent and adult consumption.

C

TO WHAT EXTENT DO OUR CURRICULA PREPARE STUDENTS FOR THE PROBLEMS THEY WILL FACE IN SECONDARY AND HIGHER EDUCATION?

Barring the recent type of textbook referred to in the last paragraph, the bulk of the material in the lower grades is of such a nature as will inevitably create conflicts for children who take them seriously. This rather drastic judgment is based upon the following reasons.

1. Our curricula contain so much that is utterly incompatible with the scientific outlook. Enough has been said already to give adequate support to this statement.

2. The certainty and assurance and complacency with which our very uncertain ideas are given to children prevent children from having experiences in facing uncertainties calmly and creatively. An article appearing in RELIGIOUS EDUCATION some time ago emphasized the unreasonableness of college students in their demand for absolute certainty on religious questions while at the same time making no such demands where scientific questions are faced. This is the natural result of religious teaching. Children are lead to *expect* too much of God. He is so good and in such complete control that he cannot possibly be squared with life without serious conflict.[50]

3. Religious teaching is focussed to a great extent upon ideas and beliefs. When we consider the vulnerability of speculations of any sort, the danger to the religious life is obvious. There seems to be a gradual shifting to a focussing of religion in social purpose, but the movement is still in its infancy. *A Project Curriculum for Young People,* by Shaver (University of Chicago Press) and *The Church and Social Relationships,* by Herring and Landis (The Pilgrim Press), together with outlined studies on race and international issues from various publishers, serve to illustrate this new tendency. In the lower grades, however, little of this new approach to the problems of life can be found.

4. Conflict is inherent in our curricula. Every brand of religious opinion is aired with little attempt to prepare children to evaluate such opinions. This is particularly serious when the present custom of selecting courses from any or all publishers is considered. In the course of a child's experience in Sunday school he is

likely to be told that God talked to Moses face to face and that he did no such thing, that God slays the wicked and that he does not. Equally contradictory ideas can be found in any published series, and sometimes within the covers of one text. When children are not helped to live happily and creatively in the face of uncertainties and conflicting views, what can we expect them to contribute to religious thought and experience? What integration of personalities finding expression in religious purposing can be hoped for?

1. *Everyday Lessons in Religion,* p. 25.
2. *Bible Stories for the Sunday School and Home,* p. 22.
3. *Trust in God,* p. 9.
4. *The First Book of Religion,* by Mrs. Charles Lane. p. 6.
5. *The Child in His World,* Chamberlin and Kern. p. 30.
6. A course for Intermediates. pp. 113 and 114.
7. *At School with the Great Teacher* (Pilgrim Press Weekday Series), p. 140.
8. *Bible Stories for Sunday School and Home* (Course I, Berean), p. 26.
9. *Game, Gift and Story,* by Ferris (Constructive Series), p. 145.
10. *The Little Child and the Heavenly Father* (Berean), p. 53. *A Friendly World* (Beacon Press), p. 33.
11. *Walks with Jesus,* Chamberlin and Kern, p. 139.
12. *The Little Child and the Heavenly Father,* Part VI, p. 115.
13. *A Friendly World* (Abingdon), p. 26.
14. *The Little Child and the Heavenly Father,* Part I, p. 67.
15. See "Teaching About God," article in *Child Study,* October 1927.
16. *Kingdom Stories,* Part III, p. 43 (International).
17. *Stories from the Olden Times* (International), p. 245.
18. *At School with the Great Teacher* (Pilgrim Press), p. 110.
19. *The Bible and the Bible Country* (Beacon Press), p. 5.
20. *Bible Stories for Sunday School and Home* (International, Course II), pp. 21 and 25, Teacher's Manual.
21. *The Bible and the Bible Country* (Beacon), p. 38.
22. *The Story of Our Bible,* Hunting (Scribner's).
23. *Old Testament Story,* Corbett (Constructive Series).
24. *The Little Child and the Heavenly Father* (International), Part I, p. 69, Teacher's Manual.
Bible Stories for Sunday School and Home (International), p. 152.
Trust In God (Christian Nurture), Lesson III.
25. *Trust In God* (Christian Nurture). Lesson V.
26. *Bible Stories for Sunday School and Home* (Course III, International), p. 315, Teacher's Manual.
27. *Stories from the Olden Times* (International), p. 244, Teacher's Manual.
28. *Bible Stories for the Sunday School and Home* (Course III, International,) p. 315, Teacher's Manual.
29. Course III of above. p. 221, Teacher's Manual.
30. *The Little Child and the Heavenly Father* (International), Part V, p. 67.
31. *A First Primary Book in Religion* (Abingdon). p. 189. *Bible Stories for Sunday School and Home,* (Course I, International), p. 83. *The Little Child and the Heavenly Father,* (International), Part II, p. 120.
32. *Hero Stories,* (International), Part IV, p. 37.
33. *Heroic Lives* (Beacon), p. 88.
34. *The Fatherhood of God* (Kindergarten, Christian Nurture), Section I, Lesson 20.
Bible Stories for Sunday School and Home (Course I, International), p. 70.
35. *The Early Days of Christianity* (Abingdon), p. 39.
Bible Stories for Sunday School and Home (Course I, International), p. 149.
Stories from the Olden Times (International), p. 188.
36. *Christian Life and Conduct* (Scribner's) General emphasis.
37. *Stories from the Olden Times* (International), p. 46, Teacher's Manual.
38. *The Life of Jesus,* Gates (Constructive Series), p. 51, Teacher's Manual.
39. *Stories from the Olden Times,* (International), pp. 56, 233, 288.
Rules of the Game (Abingdon).
Obedience to God (Christian Nurture—Second Grade). Whole text.
40. See especially texts on Old Testament in Constructive Series.
Heroic Lives, Vail (Beacon Press).
41. *The Life of Jesus,* Gates (Constructive Series), Nativity lesson.
42. *The Junior Bible* (Scribner's), Part II, p. 27, Teacher's Manual.
43. *Heroic Lives* (Beacon), pp. 113 and 115.
44. *Ibid.,* p. 73.
45. *Peter and Paul and Their Friends* (Beacon Press). p. 35.
46. *The Life of Jesus,* Gates (Constructive Series). p. 21, Teacher's Manual.
47. *Heroes of Israel,* Soares (Constructive Series). p. 69.
48. *The Life of Jesus,* Gates (Constructive Series). pp. 55-56.
49. *The Child in His World* (Constructive Series). p. 37.
50. "Spiritual Values in Higher Education," article by L. T. Hites, RELIGIOUS EDUCATION, August, 1926.

TEACHING THE BIBLE IN AN AGE OF SCIENCE

EDWIN E. AUBREY*

MARY THOMAS has just come into my class in Introduction to the New Testament. She comes from a home of religious traditions and her parents are even conservatively religious with a certain distrust of modern scientific "materialism." Mary is very much attached to her parents, especially to her mother who is a woman of fervid devotion and fine social outlook. But college study has brought her into contact with scientific courses and with historians who respect nothing as sacred which is not well attested by both internal and external evidence. At the same time, Mary is fond of poetry, and has a keen sense of esthetic values. As a girl of sociable habits, she has discussed in many dormitory groupings, during her two and a half years in college, the meaning of college and has picked up several ideas about "personal adjustment through a philosophy of life" which smack of psychiatry and progressive educational theory.

And now she has come into my class in New Testament; and mine is the responsibility for introducing her to this great literature of the Christian faith. Of course, I feel very strongly its value, but does she? Or is she here just to see if there's anything in it to justify her mother's constant reference to "the Good Book?" Perhaps she has come to the course with the feeling that, being in a department of religion, it should make some contribution to her philosophy of life. (Her mother has indicated that it will give her all the philosophy of life she needs; but her room-mate insists that "there's more hope in a test-tube than in the Sermon on the Mount.") What dare I assume in introducing her to the Bible; and can I give her a view of the Bible which she can hold with pride in the face of her room-mate's scepticism, and yet not destroy her appreciation of her mother's faith?

Clearly I must come to terms with her scientific courses and her room-mate's scientific outlook; but does this mean that I need yield all those religious claims which her room-mate and scientific instructors could not admit? Then again, with regard to her psychological ideas of adjustment as the key to well-rounded living, what shall I say about religion as a life force? Shall I speak of religion as a form of man's adjustment to the other forces of life; or shall I insist that there is something God-given about religion which science and social adjustment do not share? Of course, my answer to this last question will have serious bearing upon the way in which I treat the Holy Scriptures: whether I emphasize the "Holy" or the "Scriptures." At the same time I must remember her esthetic demands, and this makes me wonder if I can conserve the appreciation of the spiritual struggles of the early Christians, while I try to analyze the play of historical forces upon their faith. What will such an analysis of the early Christian movement do to her conception of the authority of the Bible? It is apparently not the question of authority, in itself, that presents the problem; for certainly her "heretical" room-mate believes in the authority of scientifically verified facts. The issue seems to be as to whether Mary Thomas can grant any other sort of authority, as for example the words of Jesus spoken nineteen centuries ago, as any more authoritative than the reflections of an equally penetrating contemporary. It is a matter of the authority of special utter-

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ances as over against the verifiable conclusions of the scientist. To be sure, her minister at home has drawn a distinction for her between the Bible as religious authority and as authority on matters of science; but she is not convinced that the matter is so simple. As she said to me, "If science is the study of our experience by extra careful methods, and the Bible is a summary of great religious experience, then I don't see why the Bible shouldn't be taken with just the same caution as we take scientific hypotheses. And then, why shouldn't we submit the Bible teaching to the same tests of actual experience?" With a general warning to admit the possibility that the biblical writers may have had a unique experience which *we* cannot test, I urged her to hold the question till the end of the course, to see if it was solved by that time. Her parting rejoinder was, "Well, if it's so unique as that I don't see what good or harm it does *me,* anyway."

It is plainly "up to me" to meet her case fairly and squarely. Otherwise, my teaching would be both fruitless and dishonest. On some points of method I am clearly convinced. I shall insist, to myself and to her, that the whole process of education is a unity: that there is no difference in the universe of experience, but that science and religion both deal with the same facts of life. I shall also insist that no startling change in the nature of the world or of human beings has taken place since biblical times: that the world we live in is the world they lived in (except, of course, for certain inventions which make social life more complex, and mutual knowledge among men an easier achievement). Still further, I shall stand upon the ground that the religious insight is an insight into the same world as science explores. This is not to say that the religious genius, like the artistic genius, may not leap ahead in his insights beyond the slowly plodding scientist who carefully builds his road as he goes; but it does imply that he who follows after had better understand whither he himself is to go, lest, leaping after the genius, he fall into the Slough of Despond that lies between the tested reality and the vision splendid. Nay more, I am ready even to declare that the appreciation of any sublime reality, whether of artistic creation or religious expression, depends upon a clear understanding of its composition. This applies not only to a symphony, but also to a prophetic ecstasy or a messianic confession of Peter.

Such a clear understanding depends in turn upon freedom from prejudging the situation. I am aware that, if I confine my attention to one phase of such an experience, I may easily try to force too much into a single line of explanation. To interpret the Pauline letters as solely mystery-cult language in the mouth of Paul, or the life of Jesus as due to his divine fore-knowledge, would be as unfair (I was going to say "unscientific") as to attribute the American Revolution solely to British taxation. It would be possible, too, to assume that the response of any of his contemporaries to Jesus was for the same reasons as those for which *I* would follow him. But this has already been condemned as the "psychologist's fallacy." And how easy it is to interpret the biblical materials to suit one's own theological or cultural prejudice! Yet we have simply to remind ourselves that our theologies and our cultural inheritance were unknown quantities to the writers of the Bible; who must therefore have regarded many of the experiences they recorded in a very different light from my favorite interpretation. However difficult it will be to do, I must identify myself with the first-century citizen before I can introduce Mary Thomas to the letters of Paul or to the Gospels.

On still another principle of teaching

the Bible I shall stand firm, despite the protests which Mary's mother or her room-mate may make: I shall admit all available tools of study, from the record of the mother's experience as she has been helped by reading her Bible, to the rigid, unemotional scrutiny of the room-mate's "scientific" temper. It seems to me that to exclude any method of seeking the meaning of a given incident or dictum is to lapse into a narrowness, which to the mother would deny God's presence in all of his world, and to the room-mate would be unscientific and intolerant. All the facts must be allowed to speak. A theory about Jesus which admits his sayings about his sonship to God, but rejects his failure to heal at Nazareth or his declaration that his followers should do "greater things than these": such a theory, or its reverse, is manifestly unsound procedure. The student must also be trained to keep herself out of her descriptions of the past, for here creep in the distortions to which we are so prone: distortions of perspective in making Jesus the ethical teacher so prominent to our academic minds that we lose sight of the mystic; distortions of arrangement so that we put later in the story of his life events which we find it more reasonable personally to explain as coming later; and distortions of meaning as when we think Jesus in a given sermonette was "speaking to us."

But Mary Thomas may well object that to be as strictly analytical as her room-mate insists is to lose much of the meaning of any experience. Her love of poetry has taught her that a poem is not only what it is composed of, but also what it does to her. And I am sure that, when she remembers that, together with her mother's life, she will insist that the New Testament is not merely a product of the early decades but also a power in the present age. Then, what shall I do in my teaching? Obviously, in a single semester I cannot take a census of the place of the New Testament in the religion of twentieth-century Christians. But this I *can* do: I can present human nature of the first centuries so clearly through the pages of the New Testament, that, on the scientific assumption of the essential identity of the original nature of man during the intervening period, the significance of their experience for our day will stand out free from the incidentals of their generations. But human nature is so largely a social product, that the New Testament social environment must be known as the *sine qua non* for an understanding of the book itself and of the human nature it reveals.

I have met Mary Thomas' type before, and so I have hope for the outcome of her study. Unless she is very different from her sisters whose background is the same, she will come out with a sense of achievement. Her room-mate will respect her attitude for its thoroughly scientific outlook; and because, incidentally, Mary has taught her a thing or two about scientific method. What is more, Mary will respect herself. She will find in this approach to the Bible a way of looking at the problems of religious experience, which gives her an answer to the question, "Is religion, like education, a process of adjustment?" She will have found a more intelligent conception of religious authority, and have discovered it to be in harmony with her ideas of scientific authority. She will have learned that analytical study does not destroy, but rather enhances appreciation of religious values.

Not the least important result will be that her attitude towards her mother's naive faith, which seems less harmonious with the historical meaning of the Bible than she had even supposed before, will have become, paradoxically enough, more sympathetic and understanding and appreciative than ever. She will have learned the deep reality of Count Keyserling's assertion that "it is an ad-

vantage, not a disadvantage, that men are becoming stronger intellectually. The problem is to make the intellect more profound. Once the intellect has developed sufficiently to understand the meaning of faith, the profound significance of all that it originally regarded as nonsense, then the intellect will become religious once more. Not before. Modern man is intrinsically an intellectual being. Only that which he has understood becomes a vital force in him. Let him, therefore, understand what made his unreflecting ancestors great."

* * * * * *

If what has been said of the case of Mary Thomas is reasonable, then there are several implications which should be stated more definitely. These are naturally both negative and positive.

In the first place, the college teacher of biblical literature is not to be a preacher or propagandist. His primary job is that of a historian. This being so, his first responsibility is to teach the Bible in its own setting, and to allow it to speak its own message,—not the one he would like to have it express. This message is often disappointing, and no amount of concentration on the beauty of the final psalm in Habakkuk will convince the thoughtful student that the prophet gave an answer to his own scepticism about Jahveh's justice. The same difficulty confronts the teacher who assumes that the Bible contains all the really significant spiritual discoveries of the race: the Bible simply ignores the whole inductive method of reasoning which means so much to our modern thought. That the Semitic group were deficient in this type of philosophy must be admitted; and the Greek influence given its due. Another form of this preaching is the use of the so-called "noble passages of Scripture." Apart from the dubious pedagogy of the memorizing technique; this practice assumes that such passages contain certain spiritual energies in themselves, thus opening the door to all sorts of subjective canons in teaching. Beautiful as the Twenty-third Psalm may be as poetry; one must admit serious obstacles to its resolution of the intellectual restlessness induced by modern science and philosophy.

Some teachers think to avoid this whole area of problems by teaching the Bible as literature pure and simple. The escape is not so easily achieved. If literature has any meaning, it is as an expression of human quests or human discoveries. How can the great experiences which produced great literature be known apart from historical settings or personal backgrounds?

There are still among us those who regard the Bible as a story of *special* divine guidance; who, though not believers in verbal inspiration, yet insist upon the uniqueness of biblical literature. When Mary Smith comes to the classroom of such a one, she finds herself lifted bodily out of the normal atmosphere of historical and literary study into a fog where normal human experiences become curiously distorted and the light of human reason becomes a dazzling blur. All difficulties of interpretation and all critical appraisals become meaningless in the face of such "uniqueness." Such a classroom atmosphere serves only to accentuate the gap between religion and normal life. The biblical material is a record of human spiritual striving of a small group of people, in a limited part of the world during the limited period of one millennium: this view is demanded by the perspective happily coming into modern thought. Of course, there are common features of all human experience in the Bible; but its claim to our attention rests precisely on this universality of human problems and responses rather than on its uniqueness of background.

A more perplexing problem confronts the teacher of the Bible when he meets

the student on the matter of personal adjustment. We often assume that a "problem of faith" raised by historical study of the Bible is always possible of adjustment in terms of intellectual re-orientation. The result of such a personal conference is that the student goes away feeling that the answer proposed was reasonable but not convincing. This is due to a confusion of two adjustment problems: the problem of re-orientation of intellectual concepts, and the problem of re-adjustment of emotional life. To many students like Mary Thomas the Bible is not only *the* Bible: it is *her mother's* Bible. The emotional transfer of filial affection from the parent to the parent's convictions is easily produced, but not so easily resolved. In other words, the Bible is often a symbol of parental authority; and the student attitudes toward the Bible (attitudes of antagonism, devotion, or cynical indifference) are often in reality attitudes towards parental authority. The advisor who treats such attitudes on the level of the biblical material is offering a possible palliative but not a cure. It took me some time to learn to inquire of my religiously perplexed student about her home life, and to meet the problems of Genesis by a discussion of family loyalty.

But this is not the only aspect of this problem. There is a more sinister danger which confronts all biblical teachers, whether conserving or destructive in their treatment of such problems. The trained psychiatrist is aware of the delicate task he confronts in effecting emotional re-adjustment without producing a permanent transfer of the fixated emotion to his own personality. Very often the teacher ignores this danger, and congratulates himself on having "liberalized" or "saved" his class members, when he really merely transferred parental authority to himself. The danger at this point demands emphasis, because progressive-minded teachers frequently rationalize such processes as "personal instruction," "humanized t e a c h i n g ," "teaching through personality." Far be it from me to decry personal contact and humanized instruction! In so far as the teacher learns the real personal background of his students' intellectual quandaries and queries he is making a valuable contribution to education as adjustment. But many interpret this new educational humanism in sentimental fashion, and develop attachment to themselves rather than to truth or comprehensive adjustment of the students' personalities. For this reason I confess myself opposed to the intrusion of the teacher's own personal tastes and opinions into teaching; much as the advocates of faculty-student contacts often laud such a method as "r e a l intellectual leadership." T h e teacher of religion handles concepts which have an emotional aura unknown to the concepts of "mass" or "metabolism." For this very reason, his task is more delicate, and his teaching method must be more carefully scrutinized as a technique for securing adjustment. There came one to Jesus who said "Good Teacher, what shall I do to inherit eternal life?" The answer of Jesus is not without its suggestiveness to us: "Why callest thou me good?" Perhaps he saw the peril of mere personal attachment, for he referred the would-be learner to values beyond his own personality and offered other objective tests for the social and religious adjustment of the young man. Are we teaching the Bible as a record of human experience, rich in meaning as every profound literature must be; or are we using it to light up our own personalities as we stand before the class? For this we must answer to our students; and their condemnation or praise will be implied in their future dependence or self-possession as they make their adjustments to the problems of a larger life. "Once the intellect has developed sufficiently to understand the meaning of faith.....then it will become religious once more."

SCIENTIFIC OUTLOOKS AND RELIGIOUS CONCEPTIONS

QUESTIONS RAISED BY CHILDREN AND YOUNG PEOPLE

A Composite Study*

The Cleveland Association of Professional Religious Educators was urged last autumn by Professor Artman to undertake some research or study project that might occupy a considerable time. A short while later the Editorial Committee of the Religious Education Association suggested that we might undertake the study of certain aspects of the Philadelphia convention topic—"Education in Religion in an Age of Science." Responding to the invitation, the larger Association of Directors and Ministers of Religious Education, of which the Cleveland group is a part, undertook the assignment.

Groups of directors in Cleveland, Manhattan, Brooklyn, St. Louis, Kansas City, Denver, Pittsburgh, Toledo, Philadelphia, Detroit, Newark, and Baltimore have been and are participating in this preconvention study. Isolated directors throughout the country likewise are studying the subject. Students in institutions like Teachers College and Union Theological Seminary, New York, have given considerable time to the problem. The difficulty has been to collect these scattered contributions into one symposium of value.

The phases of the general subject which the directors have studied are the following: (1) Where do questions involving the relations between science and religion arise in the minds of children and young people; (2) How do these questions usually resolve themselves; (3) Where is a cultural need in this field commonly or often unmet, as, for instance, where dangerous ignorance remains undisturbed, or where possible religious values in scientific knowledge are unused.

A questionnaire was prepared as a rough tool for securing facts relative to the problems involved. Since this first questionnaire was completed a refinement and elaboration has resulted in a new one, but inasmuch as the first draft has been widely circulated and results assembled, it forms the basis of this study. Its authors claim for it no merit as they have had little opportunity to refine it through experimentation. We print it in full:

I

The Questionnaire Used

In the thinking of some people there appear to be certain points of conflict between science and religion. This conflict arises when certain religious theories which have been held seem to contradict certain scientific theories, i. e., science and religion do not seem to tell the same story. The point of conflict may center in the manner of creation, the nature of miracles, the virgin birth of Jesus, the immortality of the soul, the nature of the Bible, the resurrection of Jesus, or in other questions.

It may be that these questions which disturbed others have never concerned you or have been easily adjusted in your case. Perhaps you have never experienced any conflict of this nature and perhaps you have.

Will you answer the questions below as clearly and with as much detail as possible? You are not asked to sign your name. Your statements will be considered with those of hundreds of others, that more light may be thrown upon this whole problem.

Has there been in your thinking what you would consider a conflict between science and religion: Yes..... No.....

NOTE: If you have answered "yes" to the above question, please continue with the answers to the following questions:

1. Has it concerned you seriously? Yes..... No.....
2. Around what problem or problems did it center? Describe in detail.
3. At approximately what age in your life

*Data assembled by the Association of Directors and Ministers of Religious Education were united in this report by Rev. John R. Lyons, President of that Association.

did it arise?.....
4. Were you in school at the time? Yes..... No..... If so, what school?..... What grade?.....
5. Tell how the conflict arose.
6. Have you settled the conflict for yourself? Yes..... No.....
7. If so, how did you settle it?
8. If you have settled the question, state the conflict as it concerns you at present.
9. Remarks.

II

SOME QUESTIONNAIRE FINDINGS

From a small sampling of students of high school grade and up, and of adults in various Protestant church groups in several of the larger cities, these interesting results were obtained:

To the question "Has there been in your thinking what you would consider a conflict between science and religion," —75 responses were received, 28 affirmative and 47 negative. Only 11 out of the 28 professing to have had conflicts of this nature said that these had concerned them seriously, while 3 were uncertain as to whether they had been seriously concerned or not.

The second question asks, "Around what problem or problems did it (the conflict) center?" Nearly 20 problems were listed. Most of those answering this question reveal that not one but several problems troubled them, as the 28 persons listed 55 problems. These were:

(1) Concerning the Universe:
Creation of the Universe, 14.
Miracles, 9.
(2) Concerning God:
Existence of God, 3.
Nature of God, 2.
(3) Concerning Jesus:
Virgin Birth, 7.
Resurrection of Jesus, 3.
Divinity of Jesus, 1.
(4) Concerning Man:
Immortality of the soul, 4.
Problem of individual freedom, 2.
Possibility and nature of prayer, 2.
Evil in a monistic system, 1.
Nature of human personality, 1.
What authority backs ethics, 1.
The entrance of sin into the world, 1.
Naturalists are irreligious, 1.
(5) Concerning Christianity:
Truth of the Bible, 1.
Place of Christianity among world religions, 2.

It is to be noted that many of these problems listed are those mentioned in the introductory paragraph of the questionnaire. Just how far suggestion has loaded the answers is difficult to determine.

Typical of many answers to the question "Around what problem or problems did it (the conflict) center" are these:

"The manner of creation which brings in the idea of an impersonal God, or ultimate force, as opposed to one who is vitally concerned with us all, individually." "Why do men who have learned much of the world's affairs, say nature, sort of in their knowledge become self-sufficient?" "Evolution—origin of man as in contrast with first book of the Bible." "What place is there for a Creator in a world governed by law, and in a world whose beginning and development was by law? Is not Christianity, rather than the ultimate religion, the true religion, simply the latest expression of the religious instinct?"

The third question asked is, "At approximately what age in your life did it (the problem or problems) arise?" From the following table it will be seen that the range varies from 13 to 40, with the peak age clearly revealed at 18 and 19 years.

Age 13—1	Age 20—3
15—3	21—2
16—2	25—1
17—2	30—1
18—5	35—1
19—6	40—1

Twenty of the twenty-eight troubled by problems relating to science and religion said they were in school at the time these problems became acute. These include seven high school students, ten college students, and three engaged in post-graduate studies. The first year in high school and the junior year in college are the years of greatest difficulty.

"Tell how the conflict arose." The

class room is mentioned eight times as the setting and cause. Specific classes are Biology (3), zoology, geology, sociology, English, and Old Testament. Reading is blamed by two correspondents. Conversation, church school, and a college teacher are likewise accused of causing the problems to become irritating. Some reported:

"My best friends believed one thing, my family another." "From the study of philosophy, evolution, physics, etc. Not only from the study of the evolution of man, and all life, but the evolution of Christianity from the primitive religions of the world and the fact that many of our beliefs and rituals are found in the pagan religions." "Through conversation with 'doubters.'" "Through the apparent conviction around me that the findings of science were the truth over against revelation."

For better or worse, these conflicts have largely been settled. 21 say they have settled their problems, 5 have not, while 2 have partially settled them. No part of the questionnaire brings out more interesting and varying disclosures of the intricate processes of thought than this which asks how the correspondent settled his conflicts. Reading more of science resolved the problems for three. General reading accomplished the same result for four others. Still others reported that talking, "facing the problem," faculty instruction, preaching by their pastors and by famous preachers, changing from a fundamentalist to a liberal college, study and prayer, and a method having "nothing to do with any university work" were the means of resolving their conflicts. Resolution of the problems came about through these reported processes:

"The findings of science are all hypotheses. The truth of science and the truth of revelation must be identical. The limitations of humanity due to sin cause the apparent conflict." "By a realization of the fact that science is of the physical, religion of the spiritual." "Going deeper into the study of embryology I began to doubt whether all the intricate processes could have 'just happened' to come about. I found that many things could not be explained by stating laws and evolving theories. Somewhere, somehow, there must be a 'destiny shaping our ends.'" "Faith and belief in God's omnipotence." "The first verse of the Bible settles it, as the time it (creation) took is of no consequence." "Through facing the questions squarely, fully resolved to accept whatever truth came from any source, but not to be too naive in accepting new points of view. Whitehead, Jacks, Schweitzer, Dewey, have all helped."

"If you have settled the question, state the conflict as it concerns you at present," brought several interesting replies, space for which is not available in full. A wholesome attitude prevails, and a determination to teach and live in such wise that nothing will be given that must later be unlearned.

It is regrettable that there was no adequate provision for the presentation of experience on the part of those who have had no conflicts between science and religion in the questionnaire used, though further development of the questionnaire now provides for that. However, in three statements at hand the reasons given are: (1) Religion is only one way of looking at truth; (2) Reading the Bible in a "broad way" and keeping it separated from scientific ideas prevents conflict; (3) A Catholic feels that the church is infallible, and that "science is revealing God's law to us" and helping the church know God's will for his children.

III

CASES OF CHILDREN'S QUESTIONS INVOLVING THE RELATION OF SCIENCE AND RELIGION*

A girl of twelve asked about the Adam and Eve story. It was explained by an aunt who is a psychoanalyst as a folklore myth handed down and crystallized in Bible form. Quick as a flash the girl said without disturbance and without seeming to follow up the idea, "Well, then maybe God is a myth, too, who knows." She shows no particular interest in religion, but joined a Protestant church with an instructed class.

Her brother, four years older, has al-

*From Mrs. A. J. Brown of the Child Study Association.

ways read scientific books. He expresses no conflict, but finds church attendance boresome, and seems to accept scientific explanations of origins. "God" is accepted by father and mother in the conventional, orthodox conception. Religious instruction came through Sunday school, church service, and Bible story reading in early years. Mother assumes an attitude of unquestioned acceptance of orthodox beliefs, but religion is little discussed at home. The boy joined the church after several conferences with the pastor.

A child of four and a half had not received any formal religious education other than training in manners and morals. She asked "Where is God?" When told that her mother did not know, she advanced the theory that God was in her mother, as God made babies and babies came out of her mother. We do not know who told her God made babies, but her idea seems accurate enough for the moment, though it is hard to know just what it means to her. She saw a print of the Madonna and Child in the sky, and said it was a silly picture because no ladder was long enough to go to the sky and there was nothing to stand on if you got there. When told it was just a story, she seemed satisfied, but inquired where was the baby's father. She was told that the baby grew up to be so good that people said God was his father. The child objected that of course God was not his real father, because you had to see your father. Mother agreed that God was not his real father—that it was just a story to show how good he was.

In one home there never was a conflict between religion and science as neither subject became the center of attention. The boy, however, became interested in astronomy and had many long talks with his father on the subject, but it never interfered with the religious talks. The girl would lean somewhat toward the religious side, but listened with interest to the talks on astronomy between her father and brother. Both children were taught that we, too, were ever learning new things about science, and that the life of Christ and his wonderful character was one to admire and follow and use as an example in everyday life; that God is love, that all joy and sorrow in life give us a better understanding of self and of others. There was no particular type of instruction in religion. It was not used as a force, either for discipline or moral behavior. The children were taught that the church has its place in the community for the good of the people, and part of the Bible has a place because of the inspiring and wonderful life of Christ.

By the time the girl was six and a half years she had learned the molten globe theory of the earth's beginnings. At her own request, she later attended a Bible class and about the same time heard something of the planetesimal hypothesis. The conflicting stories troubled her a little as at that time she came in daily contact with people who held religious views. She asked questions and upon being told that neither of the scientific theories was definitely proved, said she preferred the Bible stories; although here too she received a candid explanation. Since then, however, active interest in the whole matter has partially subsided, due perhaps to a multitude of other interests and the fact that she met her religious friends, to whom she was very much attached, less often.

An uncle of a little girl of four jokingly said to her as the first snowfall came, "See, now I made it snow for you." The little girl half knew better, but in conversation with her mother and father the question came up as to whether God made it snow. The father said "Yes, but this is the way He does it. He has a great big ocean and the sun warms the water until it becomes vapor and rises to become clouds, and sometimes when the

clouds are heavy it rains, but when it is very cold the vapor freezes and then we have snow." The same child on her own initiative, without ever having asked where she came from, began telling her mother "I came from God," and also, since the mother did not follow it up with further explanation, she kept saying, "God sent me down in an automobile—*remember,* God sent me down in an automobile." The same explanation as was given about the snow was used here. "Yes, God sends all little babies," but "God's way" of bringing the baby was explained.

A 19-year-old boy answered his mother's questions about his ideas of religion and science: "Religion is a product of our fancy—a pure product of the mind. Science is a product of the senses. I do not believe anything that you cannot test out." Question: "Do you believe in a God?" "I have no evidence whatever to point to belief in a personal God. From my study of science there would seem to be a coherence between the laws—or one underlying law. If you want to call that God, all right. You do not take mind into account. We have no evidence for its being anything more than a mechanical process. As for dogmatic religion, I cannot go it at all."

IV

"WHY THE LENS, THE ELECTRON, AND THE COSMIC RAY HAVE 'SMOKED OUT' RELIGION"

This is a report of the reactions of high school youth to questions on the above topic presented to them by their minister, and discussed in the regular meeting of their society. The church in which this experiment was conducted is a liberal community church with liberal ministers and a membership inclined to be liberally minded, though including some fundamentalists.

Procedure: Mimeographed copies of the three questions given below were mailed to each member of the group three days before the society met. The 45 or 50 students were divided into three equal groups, each under the leadership of an adult. Each group discussed the questions for a period of thirty minutes under leadership of chairmen elected by the group. The secretaries of each group reported findings to the society as a whole, where they were discussed for a period of twenty minutes or more.

Questions and student statements in reply follow:

1. The lens has pushed man's vision into the "invisible" and he nowhere has seen such a thing as "soul," "personality" or "God." Why should we then think of God, soul, and personality?

Answers: "We think of them because we think of many things we can not see. We cannot escape them." "We never expect to see God, the soul, and personality, so we cannot be affected by our inability." "God, personality, and soul cannot be affected by the microscope."

2. Man has stumbled over the electron. It is a form of electrical energy. It is mysterious. We see its effects, we do not see *it.* It tells us *much* about a world of *things,* but nothing of a Realm of God, a Heaven, or a Hell. Religion talks all the time about Realm of God, Heaven, Hell—and the electron has given religion lots of trouble. What are we going to do about it?

Answers: "The electron has not given us any religious trouble." "Personality cannot be reduced to electrons. We should accept science as a part of religion. We must go back to God to comprehend religion."

3. Professor Millikan has found a ray, a *beam* from *nowhere,* beyond the visible universe. It is *powerful,* but has nothing to do with justice, mercy, love, Jesus, gods, and immortality. How are we going to handle these lenses, rays,

and electrons, and at the same time hold on to God, Christ, and the faith that "we are the children of God?"

Answers: "Actual sight of the eyes has nothing to do with spiritual issues." "We have decided that there should be no argument between science and religion because the deeper one delves into science, the more wonderful the creator (or the universe) becomes." "The findings in science do not destroy our religious beliefs."

Repeatedly members of the groups said that for them there was no problem presented by the findings of science. Their religious beliefs were such that science could not affect them.

Careful reports of the student discussions and conclusions were given by the adult leaders to the minister of the church following the meeting of the young people. With this material in his hands he proceeded to develop his sermon for the following Sunday morning, which was heard by parents and youth alike. Similarly each of the nine sermons in a series called "Religion and Youth" was previously considered by the young people in this constructive manner. Such constructive teaching of religion would seem to prevent the catastrophies that come into the lives of those who now claim to be disturbed.

V

THE RELIGIOUS EDUCATION OF CHILDREN FOR A CHANGING WORLD*

There is a growing demand in this scientific age that all enterprises into which money and effort are put should justify themselves by showing actual results, and real needs fulfilled. This demand has recently been brought to bear on the church and particularly on the religious education of children. That children should be instructed in religion was formerly accepted by most people with naive confidence.

Contemporary investigations into child psychology, however, have revealed the far-reaching and sometimes evil effects of religious instruction in childhood on the emotional life of the individual. A great deal of what is called religious education is now regarded by many psychiatrists as a process whereby the life of the child is warped and twisted, whereby individuals are prevented from reaching maturity, emotionally, intellectually, and even morally. Such criticism finds ready material for its support on any college campus and challenges religious educators to make answer and to rethink the educational process.

Let us consider the first of these criticisms that much of the religious education of children prevents their attaining emotional maturity even when physically and intellectually they become grown-up. Children, as all of us, think only in terms of their experiences. Even though parents may never say a word to them about the nature and character of God, their children's conception of their relations to the ultimate in the universe will be receiving content. Since the children's experiences are largely those clustering around the home, around fathers and mothers, their attitudes toward God will be colored by the feelings they have in regard to their father-mother relationships. Their conceptions of God as a counselor, as a prayer-answering being, as a provider, as a companion, as a rewarder and a punisher—all of these concepts will be built up out of their experiences with their parents.

This does not imply that the feelings in relation to God and to parents will be identical. Feelings once experienced toward parents are sometimes transferred to God, when parents no longer satisfy.

*This paper was prepared by a committee from Mrs. Fahs' graduate class in Religious Education in Union Theological Seminary, from the mid-term papers written by the following students: Ross Ensminger, Rev. G. Goris, Rev. A. E. Taylor, Rev. G. M. Stockdale, G. Kelloway, Dorothy Hensle, V. P. Furnadjieff, Parker B. Holloway, Morgan P. Van Valkenburgh, Miss Hsin Hsiang Tseng and Miriam Chalmers.

Religion then becomes a way of compensation. God becomes to the child what he wishes his parents were but finds they are not. Sometimes it is what the child himself wishes to be that he posits in his conception of God, for instance, to be supernaturally big and strong and good. Into children's conceptions of God go their experiences with people who have been important to them—their parents, teachers, and others—the things they wish for in themselves and have not attained, the things they wish for in others and find wanting, their ideals of all that they conceive of as best and highest.

The concept "God" is, therefore, for the child, as for all of us, a symbol. It symbolizes the child's changing experiences and feelings toward his universe. It can not correspond exactly with some definite objective reality because it fluctuates and grows, and is different for each child. It changes as environment, experiences and learnings change. The important questions for the educator to answer are these. Are the attitudes and emotions and thoughts which the word "God" symbolizes, more childish and immature than the chronological and intellectual age of the child would indicate they should be? Is religion helping the child to remain childish and over dependent? Or is it helping him to grow to his full stature? Is religion for the child symbolizing a way of escape? When is this objectionable?

If the world were ideal, that is, a place in which all individuals could obtain adequate emotional security and self expression, a religion of escape would be always undesirable. In the world as it is, however, many children are deprived of these satisfactions. They may find, perhaps, a harmless and beneficial substitute in religion, but only when the desire to escape is followed by a purpose to live more courageously in this present world. The picturing of a fairy world of powerful creatures, the visioning of ideal heroes, picturing the heaven of the hereafter and the Kingdom of God in this present world may represent a childish fear of the realities of life and a desire to have personal happiness regardless of others, or it may represent a courageous struggle to make a better human society. To work in the dark, not knowing which sort of religion we are encouraging in children, is dangerous. We should be constantly on guard to see that religious ideas are growing up in children in response to real relationships in the real and present world. Children may be thrilled also with the realization that they may cooperate in the creative and evolutionary processes going on about them. Why should they care to flee from a real world of such infinite opportunities?

Let us now consider the second criticism,—that much of religious education is preventing individuals from reaching intellectual maturity. It is said that certain fixed dogmas, beloved of parents and teachers, are passed on to children under the color of strong emotion and regardless of children's own present needs. Such emotionally conditioned ideas, acquitted without the possibility of reasoned acceptance, are exceedingly difficult to revise or give up.

We can not protect children from receiving religious ideas from their environment, and we would not protect them if we could do so. Nor can we assure ourselves of religious teachings which will be free from undesirable forms of faith and doctrine. Children may come into contact with many varying forms of religious beliefs, provided all ideas come to them with a degree of objectivity so that they may examine them and judge for themselves their worth.

Thus children may be introduced to the Old Testament with all its crude conceptions of God and righteousness together with its inspiring conceptions, provided they learn that these varying ideas are those which different men in different

ages have thought as they also have struggled with the problems of the universe. Likewise, children may be introduced to the religious conceptions of other races. At the same time, the teachers who are their companions through the search will share with them their own personal religious attitudes and ideas. When children ask, as they undoubtedly will, which is true, the teacher should lead them into an appreciation of the fact that all are seeking the same goal and that this goal is still beyond anything which any of us have yet attained.

Above all else, children should be left free for intellectual development and experiment in religion on their own part. No rewards or punishments should be arbitrarily given by the teacher for the acceptance of any one group of beliefs.

The evil effects of such rewards and punishments is well illustrated by one little girl's Sunday school experience. Her teacher believed in the infallibility of the Bible, and God was presented as a big judge who meted out punishment to children who were not good. When the teacher did not secure the attention of the class, she usually resorted to her pet method of painting a vivid picture of Christ coming any minute from heaven on a big cloud, to take those who were good back to heaven with him. Those who were bad were to be cast away into everlasting fire for all eternity. Most of the children believing that they really were bad were terrified for days, especially whenever they saw a large cloud in the sky. This evil play upon the imagination of the children had the effect of producing a revolting idea of God which with great difficulty the children were able to outlive.

If, however, the experiences of men in the past can be shared with children for what they are worth as bits of human experience, and no more, in an atmosphere of objective thinking, then the children will be given richer experiences with life than their own little lives can afford. Through these they may be helped to grasp the meaning of the universe as a whole and to relate themselves to it. At the same time they are given freedom to develop their own powers.

If, then, religious teaching of this objective type may give the opportunity for intellectual maturity, is it possible to discover a method of obtaining that far more dangerous quality—moral maturity? Not our religious teaching alone, but the very social life in which we live, has operated to keep children morally immature. It has been necessary for society that certain codes be obeyed. Men have been conditioned into obeying these by strong emotional experiences of social disapproval or actual physical punishment. One of the strongest factors in inducing obedience to these codes has been the divine sanction. Men, from childhood, have been made moral infants by being taught that certain things would bring down upon their heads the eternal wrath of God. Before they are able to grasp the abstract meaning of good and evil, children are taught what things God disapproves, so that failing to have the proper relationship between God's will and the good established, they develop no criteria for judging the good. God's will is made to coincide with the will of the teacher, whether that teacher be an individual or a community.

If teaching children codes as God's will does cripple their moral judgment, are we not to teach anything to children as God's will? Again we find our solution, as in the case of doctrine, by teaching objectively. The codes of the Bible, the codes of the saints, the code of the teacher must be taught not as God's will, but as the ideas of God's will which different people have had.

At the same time we should indicate to children that God is working for the best, leaving the child to be free to make decisions in specific instances as to what

is best. In such cases, where restraint against the child's will is necessary, it should be made clear that it is the parent's will that opposes the child. Then children will not look upon God as an angry deity, or an all-seeing eye spying out evil doers, or say through fear of such a being as one little child did, "I hate God, but like Santa Claus much better." Children should rather feel the companionship of an unseen helper, and at the same time they can benefit by the maturing effect of making moral decisions of their own with the aid of the results of the moral quest that other men have made.

Perhaps the approach to the religious education of children outlined in this paper may seem too vague and uncertain. It is designedly so, however, in order that children may have opportunity for development and discovery. To undergird this vagueness, certain abstract principles and emotional attitudes should be taught as soon as the children are able to grasp them as relative to themselves. These are, to be sure, blind articles of faith, but they have proved the springboard for all the best in human endeavor. The first is that there is something infinitely worth seeking. The child should be shown how this abstract principle is at the basis of every specific example of fruitful living. It should be made clear to the child that men have called this something by all sorts of names, that it is many-sided, that it has elements of mystery. At the same time there should develop a deep sense of obligation not to any particular code, but to the best wherever he can find it.

It may be said that such religious teaching as is described above, very general in its dogmatic teaching, and objective in its specific teaching, will fail to rouse in the child the subjective contribution necessary to the development of a religious life. The child, however, is quick to imitate. If he is taught the religious life of others with the subjective elements brought out clearly, he will no doubt experiment with them himself. At the same time, he has before him in the persons of those who try to lead him actual examples of religious living. It is always true that direct teaching is not nearly so helpful as the practice of the religious life by those in the home to such an extent that the religious environment may be to the child's spiritual life what the air is to his physical life. Opportunity should be made for him to participate in worship. When his curiosity is piqued, the thought content of worship for others may be explained to him objectively. He will then, no doubt, begin experimenting for himself. Care must be taken that his experiments are treated with great seriousness. Grown-up people are often thoughtless when children pray or ask quaint questions concerning God, as if these things were a source of amusement.

This may seem a rather cool way of presenting worship, which is so warm and vital a thing for those who participate in it. It must be remembered, however, that "meanings and forms are the genuine equipment of religion only for those who have thought them through or wrought them out of their own efforts." We cannot hand over to the child ways of reaching God. We can only show him the ritual, the music, the formulae, and so forth, by which other men have worshiped, and indicate the possibilities for him.

Perhaps the core of the approach to religious education that this paper has tried to set forth may be summed up in two words—absolute sincerity,—a sincerity that points in two directions. The teacher must honestly not wish to propagate false or outworn theories no matter how precious they may be to him, and at the same time he must be sincere enough to tell the child the exact truth as far as he knows it, realizing that only as the child accepts the truth for its own sake, and not because of the avenues of its

presentation, will he possess a firm foundation on which to build his life.

VI

CONCLUSIONS

While the varying data gathered is not sufficient to give undebatable answers to the questions raised for the Association to face, there are certain merely tentative conclusions which seem to be justified.

1. Questions involving the relation between science and religion are likely to arise in the thinking of an individual at any time in his life. This statement is not an attempt to beg the question—it is based on the facts revealed in this study, that anywhere from 4 to 40 doubts arise. But it is clear that with these individuals most conflicts came between the ages of seventeen and twenty. Whenever dogmatic and authoritative religion and atheistic science are placed in opposition a conflict is probable.

2. There seems to be an even more certain conclusion to the second half of the first question. It is that such conflicts can best be resolved by recognizing the problem and dealing with it as such. One who refuses to do so either robs himself of a part of truth or loses himself in a maze of doubts. There is too much evidence that a belief in true science and in an abiding religion can dwell harmoniously in the same person for any one to ignore such a resolution of his conflicts. Reading, studying, talking with friends are the surest roads to achieving these desirable ends.

3. The specific fields where a cultural need in this line are neglected are too obvious and too numerous to mention. The only conclusion to be drawn is that such neglects are the result of ignorance of possible results on the part of those creating the educational world for the individual—parents, teachers, church school teachers, and ministers. As long as ignorance of the harmony between true science and true religion is allowed to prevail we must expect such cultural needs.

STUDENTS AND MISSIONS

TENTH QUADRENNIAL STUDENT VOLUNTEER CONVENTION

CHARLES S. BRADEN*

THERE was never any time during the five days which the 3,500 delegates to the Student Volunteer Convention at Detroit were together when there was any question as to what sort of conference they were attending. This was first, last, and all the time a missionary conference. In this it stood in marked contrast to the gathering at Indianapolis four years ago. One might go further and say, with at least a measure of truth, that it was, in some respects, an old fashioned missionary conference.

This gathering was frankly advertised as a missionary convention, meeting with the avowed purpose of studying and reevaluating the whole enterprise of Christian missions, disposed to hear every point of view and consider every objection raised either by nationals of other lands or by Americans themselves. Although the management failed to meet the suggestion made by a group of students representing a number of the larger universities of the middle west, that the foremost leaders of the anti-Christian movement in China be brought to America and given a place on the platform of the convention, opportunity was given to open every question raised by that movement

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and in the sectional discusson groups or colloquia the utmost liberty of criticism and discussion was allowed. Obviously some limits had to be imposed in the plenary sessions. The privilege of criticism was freely used by foreign students. No more searching questions have ever been asked regarding missions than were uttered there.

If any point of importance regarding missions was not considered somewhere in the conference it was simply because it was not raised. One could not but be impressed throughout the whole series with the fine attitude of fair mindedness of conference leaders, missionaries and students. Americans have frequently been represented as too self-assertive, self-satisfied, and proud to admit of criticism. If the charge be true in general, then this group was not typically American. It did, however, appear highly Christian.

It is true the conference assumed to begin with that the missionary enterprise is legitimate in the present age and that Christianity has a definite mission to the world, nor was there any serious attempt made to examine the assumption itself. This fact brought not a little criticism from certain students and others, chiefly others, who felt that this was the most important question that could be raised. "When this is settled," they said, "then questions of how and in what spirit it is to be carried may properly be discussed." As one student said to the writer, "granting the original assumption, the discussions were fair and open," but his feeling was that the main issue had been passed over.

Typical of the questions that were heard from the main floor of the convention and in the smaller groups were the following:

"Can we dissociate the missionary movement from the general movement of the West to force its way into China? If so, how?"

"Have we any right to urge our religion on China in view of the unchristian nature of much of our own civilization, the value of China's own religions, the present treaty relations which are so much criticized, and the divisions and other unchristian things within the church itself?"

"Has western civilization proven itself worthy to share the gospel of love with the world?"

"How much must the giver be willing to receive in a true sharing process?"

Many of the questions were questions of larger principle and motive, but now and then straight thinking, practical minded students came back to the problems of the present life of the student and sought light on the perplexing questions that confront one there. It was inevitable that the race and color problems should arise. How shall we treat distant peoples as Christians if we do not treat nearby colored and foreign students in the spirit of Jesus? It was inevitable, too, that the great corporate sin of so-called Christian nations, war, should be considered when international questions were discussed. So insistent was the desire of a large number of students to talk of these themes that separate, special colloquia were held to discuss race and war. Although no part of the original plan, the conference committee made a place for them and leaders were provided.

The conference could not be regarded as in any sense radical, from the standpoint of the more modern, forward looking conception of missions held by an increasing number of missionary leaders, nor from the standpoint of radical student opinion. That it went very far beyond the ordinary levels of popular thinking regarding missions was very evident from the reaction of some of the representative ministers of Detroit who attended various sessions of the convention. The writer heard one of the leading preachers of the city, one who is by no

means a theological or social conservative, preach a powerful, more or less traditional type of missionary sermon in which he deplored what he called the lack of conviction of the conference.

There was a very considerable group of students who were conservative and held the old traditional attitude toward missions. One young lady, doubtless from one of the more sheltered student bodies, apparently was a bit shocked at the suggestion that America was not a Christian nation. There were some groups which had not caught the modern note. In one colloquium which the writer attended the questions raised and the discussions which followed might very well have been heard at Rochester in 1910.

In a certain denominational meeting one of the most important questions that could possibly be raised regarding the policy of that church in China was passed over almost without comment, while the momentous question as to whether a theological course should be taken before going to the foreign field occupied at least a third of the whole session. It was disheartening, yet when a few minutes later one of the leading figures of the denomination made a passionate and somewhat radical speech regarding their church in China he was heartily applauded. How explain it? The first impression of their lack of interest in discussing the question was that the group was a complacent denominationally minded company, yet their applause of the decidedly undenominational speech was immediate and spontaneous.

Many similar cases make it difficult to strike a balance. In a meeting of group leaders a half dozen said it was the most conservative student crowd they had ever met, while an equal number said it was the most radical. The truth, probably, is that it was simply a fair cross section of student life of America—not of the total student life—but of that portion of it which has a definite interest in religion. As such it was probably not far from a cross section of that portion of our total American life which is interested in religion.

Some convictions emerge out of the conflicting mass of varied impressions received at Detroit, some of which involve religious education.

1. First of all is the conviction that missions is still a very live matter among considerable groups of students, some of whom will take important places in the religious world a few years hence. It is easy to think otherwise in some of the larger universities, where there is among both faculty and students a widespread feeling either of entire indifference or frank criticism and opposition toward the whole missionary enterprise. To those who, while recognizing the need for a very serious modification in many phases of missionary thought, nevertheless believe wholeheartedly that Christianity has a great mission to the whole world, this rediscovery of student interest in missions is reassuring. The very fact that 3,500 students could be brought to an avowedly missionary conference at such expense of time and money and sacrifice of a part of the Christmas vacation, is not without significance.

2. A second conviction is that the church has been exceedingly remiss in the matter of missionary education. The range of questions seriously asked by this group which, in general missionary intelligence, doubtless far surpassed the average group of young people, indicated clearly a colossal ignorance regarding the most elemental phases of the missionary enterprise. Happily the management provided for the presence of experienced counsellors in each group discussion, in order to have at hand authoritative information as a basis for discussion.

One wonders when the church will begin to take seriously its educational problem with reference to missions. How-

ever, in view of its comparative failure in the larger field of religious education, failure here is not so much to be wondered at.

3. A third conviction is that in order to hold the interest and command the support and service of the more forward looking student leaders a number of changes will have to be made in both missionary policy and method. We can mention here but four of these changes.

First of all, missions must be, in the phrase of one conference speaker, sharing instead of propaganda. Just what that will involve, students themselves do not know. A much wider study of the religions of the world will have to be made before they can know. Again and again the question was raised not in any captious sense but with a desire to know and a willingness to receive good from whatever source, "What have the other religions of the world to share with us?"

Second, missions must concern itself not with some narrow segment of human life, but with the whole circle of life's interests, social as well as individual, and they cannot be separated from the political, social, and economic factors in the life of any people. These students were right who protested that a discussion of Christianity in relation to India involves discussion of India's political situation.

Third, missions must dissociate itself completely from anything savoring of commercial or political imperialism on the part of the nations from which missionaries go. No longer must missions rely for protection and prestige upon a favoring government. Gunboat protection and all that is included in it cannot expect the support of the younger generation of world-minded Christian students.

Fourth, denominationalism must increasingly disappear from the mission field even though it be perpetuated here at home. Every mention of unity among the churches or the development of material groups which run across denominational lines was greeted with enthusiastic applause by the conference.

4. A fourth conviction is that while the basis of the missionary appeal to students has changed radically, and while the efforts of leaders and speakers to reinterpret the old challenging missionary shibboleths such as adventure, passion, urgency, and crisis, failed to sound wholly convincing to critically minded observers, there is still a strong missionary appeal to students to which many of them,—perhaps a larger number than the modern changes in the whole enterprise will make it possible to use—will eagerly respond. Happily the conference management made no such attempt to secure immediate decision through any amount of emotional pressure or stimulus, as was customary a few years ago.

5. A final conviction, the fruit of repeated interviews with students as to how the conference impressed them, is that the impression made upon hardened convention-going secretaries, writers, professors, and missionaries is no indication as to the impression made upon the students themselves, and that, after all, is the important consideration.

Whether this conference will, in the words of one prominent observer at Detroit, put missions on the map in the colleges, is to be doubted seriously, but that at least a very large number of those who attended the convention have thought very deeply, some of them for the first time, on the question of missions in any form, and that others have re-thought the whole matter prayerfully in the light of a whole new set of facts, is certainly true. This in itself is a great gain, and would alone justify the conference. But without thinking too optimistically of what will be carried back home, it is certain that the fresh interest and enthusiasm of the groups will affect not a few others who could not go.

"THE WRESTLE OF RELIGION WITH TRUTH"*

GEORGE A. COE†

"WHEN the method and the basic concepts of religion are clearly defined and widely recognized, and people learn to distinguish between concepts and beliefs, religion can be taught in the schools. . . . We may never attain sufficient unanimity in religious belief to put these beliefs into the curriculum of the public schools, supposing that were ever desirable. But it is quite conceivable that sufficient unanimity can be attained concerning the abstract concepts and method of religion when people have learned to distinguish between them and their beliefs and religious living."

"So far as concerns religion the work of inspiration properly belongs to the churches, not the schools. It includes that arousal of response that comes from presenting a specific content of belief. Above all, it comes from social contagion through association with people who are conducting religious lives themselves."

"Either religion will continue to decline in its intellectual standing and become ever more weak and degenerate and ever more isolated from the rest of life, or else some method will be devised for putting it also into the curriculum."

"If someone should ask us to state what is that method of religion and those religious concepts which are suitable for public instruction in the elementary schools of the United States, we should be unable to point to them. That is precisely the point we are trying to make. We do not have them as yet. But we cherish the hope that in the course of time they may be developed."

These quotations from Professor Wieman's introductory chapter give an educational side-glance to his work even though its field is primarily the philosophy of religion. At several other points, likewise, the significance of his thought for education is direct and important. He holds that "during the last three centuries . . . religion has been losing ground. Fewer people are interested in religion, and those who do take interest are less intensely concerned than has been the case in many other periods of the world's history." The reason is that the "thinking side" of religion has not been adequately cultivated. New insights into nature and man have been resisted, whereas, they should have been welcomed as occasions and means for transforming the religious outlook. Wieman himself proposes a new starting point for our thought in a freshly defined concept of God. What is most characteristic in this concept may be stated as follows:

God, he says, is that feature of our total environment (or character of events, or behavior of the universe, or aspect of our experience) that most vitally affects the continuance and welfare of human life. He (or it) is that to which man must adjust himself if he is to attain the greatest goods and avoid the greatest evils. God, thus defined, certainly exists, but what sort of being he or it is we cannot tell from the definition. The nature of the divine has to be found out by experiment so conducted as to ascertain the actual concrete and detailed conditions under which these greatest goods may be secured. Such experimentation, broadly considered, is the method of religion. The fundamental principle of this method is identical with that of experimental science; but in the application religious procedure differs profoundly from scientific. A different and more difficult set of questions is involved; the data are more extensive and complicated, the forces are

*A review of Henry Nelson Wieman's book, *The Wrestle of Religion with Truth.* (Macmillan, 1927, 256 pages, $2.50.)

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more subtle, and measurement, which is the crux of science, is here out of the question.

The focal point in the method of religion is worship, which is "the way in which we establish those habits which are best adjusted to this order of the universe which is God." Three stages are recognized: First, a "time exposure" to that which the worshipper "believes to be of the greatest concern to human living"—that is, the significance of God for concrete living. This awakens the deepest drive of one's nature. Next comes diagnosis, or realization of the inadequacies of our present adjustments, and where the fault lies. The third stage is reconstruction, in which one forms a concept of what is required in order to correct and replace the faulty habit, and then takes the required attitude. Reconstruction is accomplished in and through definite thinking of clear concepts. "This method applies to every kind of effective worship and prayer."

This arresting exposition of the method of religion has obvious bearings, which Wieman does not draw out, upon the whole theory and practice of religious education. The learning of religion now consists of the pupil's experimental pursuit and continuous reconstruction of the more inclusive ends of living. This is his growing religious experience. The crux of the process is worship, but worship that is an integral part of active adjustment through analytic thinking — the initiation of purposeful acts and the intentional formation of habits through the use of intelligence. If anyone should ask where, then, God comes in, the answer that Wieman's view requires is that this kind of purposing and experimenting is both a God-ward movement on our part and a self-revelation of God's nature on his part. It should be said, too, that Wieman's insistence that experimentation requires hypotheses formulated in clear concepts makes inevitable the use of historical material in religious education; further, it leads on to a criterion for the selection and use of such material.

Strange to say, Wieman treats worship as an individual and solitary act, not as a communal experience that looks forward to social ends. The effects that he specifies are to a large extent similar to those promised by New Thought—mastery by the individual of his worries and his fears, poise, concentration, self-confidence, and the like. Worship is to him a "means to successful living" in this individual sense. The reasons for this amazing restriction do not appear; it is a mystery that the present reviewer cannot see through. Certainly the habits that need reviewing and reconstructing are largely non-solitary; they are formed and reformed by a reciprocal, not merely individual, process. They are the customs, standards, attitudes, and presuppositions of families, social sets, firms and corporations, occupational groups, churches and denominations, neighborhoods and communities, the State, and so on. One would like to see Wieman's conception of worship as habit formation applied to these habits.

Educationally fruitful is Wieman's further treatment of the place of habit in religion. The richness of life is measured, he says in substance, by the number and variety of one's habits. This is another way of saying that the human species is characterized by a surplus responsiveness to environment—a responsiveness, that is, that outruns not only animal need, but also any particular set of satisfactions whatsoever. This, put in terms of habit, implies a habit of re-forming habits. This master-habit, Wieman holds, is a law of spiritual growth. Under this conception religion becomes the most free, most creative, most change-producing type of experience and activity! But this is not all that must be said about habit. For upon the richness or poverty of one's habits depends what one shall perceive,

not merely do. Habit selects that to which we shall attend, and it determines the relative importance that we ascribe to objects. It is, therefore, because of our habits that we either do or do not transform the abstract concept of God into a definite, concrete, perceived presence.

Inasmuch as the main point that this article has in view is the educational significance of Wieman's book, we must forego discussion of a number of interesting technical points. One slight excursion into philosophical technicalities, however, must be made in order to fix the boundaries of one or two major educational implications. The formal definition of God with which the author starts, together with his assertion that the being thus defined certainly exists, is attracting attention as though it were a new and original "proof of the existence of God." Similarly, his notion of the necessity of adjustment to this unavoidable being is taken as a new justification for religion. The concepts here employed are: A qualitatively undetermined but inclusive being; desirable but undefined goods; contingency of these goods upon our conduct; contingency of them likewise upon the behavior of the inclusive being; qualitative determination of this being by observation of the consequences of our conduct. Wieman has expressed this point of view in fresh and vivid form, and he has drawn from it, or brought into relation to it, some striking inferences. But the elements of the lay-out are not unfamiliar.

If limitations of space permitted, one might well compare Wieman's God with Hegel's "pure being." If we should conceive pure being dynamically, should we not have all that is contained in Wieman's definition? And should we not subject ourselves to the insoluble difficulties that absolute idealism encountered in its struggle to construe the concrete world by means of a purely abstract first principle? But instead of following out these metaphysical doubts, let us ask whether Wieman's God is a religious as well as a metaphysical concept. An incautious reader would smell the incense of the temple simply because the honorific title, "God," is used. But remember that this so-called God, as far as the definition goes, is utterly characterless; he is moving, but we are not told whither he is going, or whether he is going any whither. Any good that is possible to us depends upon adjusting ourselves to this being, to be sure, but what good is possible? The definition would stand exactly as it is if our experience should convince us that life is not worth living.

Wieman thinks, it is true, that he has surmounted this difficulty. But again his method is further manipulation of concepts taken abstractly, that is, without dependence upon any discriminated experience. We know that this Something is good, he says, because, "by definition" it is that "which would and does bring human life to the largest fulfillment when proper adjustment is made to it" (p. 59). *By definition* it is all this! Surely, the "does bring" is a statement of fact, not the unfolding of a concept. Moreover, the meaning of the three terms, "human life," "fulfillment," and "proper adjustment," is derived from discriminated differences in experience.

Religious education has an interest in questions like this. For more and more we are forced to face this issue: Whether religious growth is to be fostered by inducing pupils to apply broad concepts, assumed to be true, which their teacher brings, or by inducing pupils to learn about, observe, interpret, control, and reconstruct experience, forming their own general concepts thereby. Shall we, or shall we not, rest the whole case for faith in God upon actual happenings in the sphere of good and evil?

But, as we have seen, there is another side to Wieman's thought. Life, after

all, is explorative, experimental, creative. William James himself scarcely went farther than our author has gone in exalting sensitiveness that outruns all conventionalities; finding out what is true by risking action upon unprecedented hypotheses; and judging our world strictly by what happens in it. Here is a basis for a definite and workable policy in religious education that will not stumble against the findings of psychology. All this is in Wieman, and yet he checks us once more by an educationally intractable theory. For he thinks that religious experimentation takes its start in mystical experience of the classical type—ecstasy or vivid consciousness without perception, discrimination, selection, or any integrated system of response. This, he thinks, is an experience of "that ultimate source of all worlds that ever may be brought forth into existence by all the different possible ways of organic reaction to diverse stimuli," and therefore, the best starting point for creative experimentation. Whether history can show that creative experimentation does to any considerable extent depend upon ecstasy for its start, I shall not pause to argue, but one can scarcely refrain from exclaiming at the utter disparity between Wieman's discussion of mysticism and his chapter on worship. Discrimination, clear concepts, organized responses are of the essence of worship as he describes it; this is the reason why it can be taken bodily into a system of religious education. But no one has shown how mystical experience such as he describes can be incorporated into education. For the conditions seem to exclude all children, many adolescents, and many adults.

PROFESSOR CHARTERS ON THE TEACHING OF IDEALS[1]

STEWART G. COLE[2]

DR. W. W. CHARTERS has written in terms of a subject of profound interest for all who cherish the well-being of childhood and the enrichment of modern culture. He believes that personality can be made strong and good through the teaching of ideals in the schools of the nation. His latest publication is a thorough-going treatment of the processes of character formation and the methods of curriculum building for that end. He has openly sponsored the priority of the "direct" over the "indirect" technique in teaching ideals, thus running contrary to the judgment of many leading educators of the day (pp. 161 ff.).[3] Whether one follows the writer sympathetically at every point or not is of secondary importance; one cannot read the book without having an enriched appreciation of the educability of the child, and without being deeply indebted for the clarification of the far-reaching problems involved in the conditioning of right character.

Three central problems face the character educator: the election of a sufficiently representative list of ethical standards ("traits" or "ideals") to insure good conduct; the provision of a full range of such life-situations as face the child from day to day; and the determination of adequate trait-activities to give the child an opportunity to carry over his ideals into social behavior. Supposing a teacher elects twenty ideals for her class, and chooses fifty situations which her class faces in their weekly round, the trait-situation crosshatch would provide for one thousand (20x50) different trait

1. *The Teaching of Ideals*, published 1927, by the Macmillan Co., 372 pages, $2.00.
2. Professor of Religious Education, Crozer Theological Seminary.
3. See also article, "Virtues versus Virtue," G. B. Watson, *School and Society*, Sept. 3, 1927, p. 286 ff.

actions in the course of study. This job analysis sets the skeleton of the curriculum. The course would then be filled out with illustrative, discussional, and practice exercises to give the study motivation, meaning, and life-values. For example, the instructor desires to present the ideal of honesty. All the occasions in the children's conduct where honesty is a phase of the situation are presented and treated with honesty-actions in order to give the group activistic experience in appreciating the value of this ideal in these situations. The test of the teaching lies not in the increase of informative materials in the child's memory, but rather in the degree of efficiency with which the individual incorporates honest habits in his several types of social endeavor. Dr. Charters reproduces in outline and with evaluation most of the important projects in such education that are being tried in American schools. Unfortunately, he does omit the significant experiment of the Character Education Inquiry, Teachers' College, Columbia University. This survey contribution is not the least valuable part of his stimulating work.

Having outlined the problems involved in character education in the first nine chapters, he turns to special treatment of the most delicate issues in making ideals functionary in life. Knowledge of rights and wrongs is not a sufficient lever to condition character. The child must *desire* to live right and to repudiate wrong, if he is to achieve the better personality. "It is comparatively an easy task to track ideals on the inspirational and informational level. Through conversation and the presentation of information it is possible to develop in the students a strong desire for the possession of an ideal" (p. 306). This high art the author proceeds to prosecute through a careful study in "rewards and penalties," "example and suggestion," and in "reasoning." Personification and dramatization are also examined with a view to estimating the place these practices have in the production of the good life.

Dr. Charters turns to the subject of the measurement of ideals with far less conviction of safe procedure than some of his contemporaries employ. Assuredly, the educator requires methods of testing the validity of the work he has undertaken. Character tests must be elucidated. But, for instance, *how* can honesty be measured? A man may be honest in many situations, dishonest in others, and doubtfully so in still others; or he may not always act with consistency in the same situation. "It is impossible to measure the general trait of honesty with any degree of definiteness because no man is consistently honest in every situation" (p. 325). There are no adequate methods for measuring most of the ideals that are prized by teachers.

The author is more interested in the person than in any one of his moral traits. This leads him to the climactic chapter in the book: "The Integration of Personality." All people have different "selves," for the reason that none have learned to associate like idealistic controls with every type of life-situation. "The keen, hard business man may be kind and pliant in his home; the man who is a 'good spender' among his business associates may be morose with his family; a youth may count his pennies for a month and spend all his savings in one evening at the cabaret" (p. 337). Consistency is a rare jewel, and a much coveted one. Reason of the reflective kind is the only human tool to bring about a deepening integration of good character. This may be done as the individual chooses worthy traits to represent desired ends of living, and as he applies these to his various situations in terms of logical trait-activities. With increasingly enriched experience the person may learn to include more and more phases of ideal conduct under fewer and fewer

principles of action. These major values lead the chivalrous adventurer to "the ultimate ends of life." This comprehensive view of the good life must be provided for in the school curriculum.

Several questions arise in the reader's thinking as he peruses the manual. Thorndyke's tabulation of inherited tendencies (instincts) are introduced into the study as "the most complete and authoritative," in the face of a widespread denial of the reliability of this classification of the tendencies in biological heredity. The author does not make any use of the instinctive equipment in the individual, beyond the recognition that "the child inherits more raw materials of action that are 'good' than of those that are 'bad'" (p. 18).

The selection of ideals is left almost entirely to the adult-instructor in the schools. The author goes on the assumption that the teacher is most competent to choose traits for child character, and that the class should accept uncritically the list of ideals which are brought to it in the construction of the course. "The need is acute for good objective lists of children's traits at the different ages" (p. 78). Under any circumstances, only mature students are qualified to share in deciding a list of ideals (p. 355). It is the function of the teacher to develop "a systematic and logical substructure" of curriculum materials for the children; it is their lot to learn "the material in the best pedagogical order" (p. 44). This position leaves little ground for self-government at the sources of character education. Usually adults are most expedient in judging what children need. But, may not the *wants* of the class be the most happy point of departure in ethical training, and also the most happy motivation for carrying out the ideals elected?

The author's position requires that he give priority to a set of ideals. These ideals are honesty, courtesy, courage, happiness, etc. What is honesty? or courtesy? Dr. Charters' theory makes it necessary to believe that there is a reliable definition of each trait which can be accepted at par on all occasions in life. "To define honesty is more baffling than to define an elm or a buttercup, yet a standard nomenclature for traits and ideals is . . . important" (pp. 45-46). Honesty can be defined by abstracting the general principle from all the stories of honesty that come within one's experience (p. 284). This defined ideal (and most of the ideals the author advocates are the traditional virtues) is imposed upon a life-situation, and from the application of an abstracted principle to concrete experience, a described trait-action is supposed to arise as the way of life for the child. But, can the educator rise from the pluralistic descriptions of honest endeavor in history to an essential definition of honesty which can be employed as controlling in the diversified conditions of children's conduct? Does honesty mean the same in Lincoln's life as in Roosevelt's life, or as in the lad's life on Main Street? The author would reply in the negative, but does not beginning with ideals in character education make one a party to the deductive and authoritative discipline in teaching, however much he may try to avoid it? Even "thou shalt not kill" is not a universal and unyielding prohibition (ideal) in present-day culture (p. 283). Penal, military, civic, and domestic situations set up different definitions of this ideal, and by no manner of means can they be unified. Honesty for a nurse in carrying out a medicinal treatment in a sick room is one, and honesty for a physician reporting to a critically ill person his condition is another. The authority in an ideal does not only reside in some defined content which may be regarded as an epitome of social experience, but also in its applicability to an immediate situation, safeguarding all the facts of importance in the new experience. Ideals must be used with discrimi-

nation. Should they, then, be the point of departure in ethical education?

Dr. Charters moves from ideal to life-situation to trait action in educational procedure. This sequence is necessary in order to carry out the direct method of teaching ideals which he advocates. To begin empirically with the life-situations of the children and in them to find idealistic traits of action and ideals (using also the findings of past experience of the individual and the race to enrich the basis of judgment), would represent the science of indirect moral instruction. The latter, though a basic technique in school work, needs the support of the former, claims Dr. Charters. Indirect teaching of ideals is at best incidental, chaotic, accidental, and ineffective (pp. 164-166). Besides, "the selection of traits and situations is left to the mood of the teacher" (p. 165). Direct teaching guarantees that the child will become acquainted with a "systematic program" of morals. "Logical definiteness" and even "logical rigidity" are permitted in order to accomplish the desired ends (pp. 47-48). "The initial acceptance of ideals is often a cold-blooded business proposition in which logic plays an important part" (p. 270). "In the last analysis high morals are a product of reason" (p. 309). The author does discover one fundamental weakness in the scheme he advocates, that is, that "the topics for discussion (in the course) may not be timely, and, therefore, no desire may be present" (p. 187). He points out how the teacher may alleviate the danger by introducing situations in the discussion that are *apropos* for the particular class. There is little doubt but that direct instruction may be very helpful to children, especially if the topic is discussed rather than presented as a lecture, and if it happens to tap the desires of the individual and to release them in a direction that is favorable to socialized character. Transfer of training from study to conduct is possible, as the author signifies in chapters 10 to 14. But, this reviewer is left unconvinced that regular, prearranged, teacher-determined, and abstract ideal-measured curriculum materials are greatly profitable in producing the better life. Is it not an open question how far any standardized course in school can affect conduct in children who are constantly conditioned to do right or wrong by human appeals in their diverse primary group environment? Will reason or logic have much weight compared with group loyalties and customary desires that envelop every child? Rational control of conduct is a very late achievement in character development. The indirect method has certain signal advantages in that it meets the children at the focus of a life problem, helps them to work out their salvation in reference to their own world of conflict, and it gives them a *method* for determining their own standards of conduct in later life. Should not the child be more interested in meeting his personal conduct issues than in speculating about *a priori traits* in make-believe situations? Are not the ideal as a symbol and the logic of defined situations more prominent in the author's procedure than the vital elements of experience in the child's position in life, which are of eternal significance in the making of character?

Though Dr. Charters as a philosopher grants the relativity of ideals, yet as a teacher of children he constantly presses for absolute norms. The abstract principle, honesty, takes on finality for him in the class-room (pp. 283, 338). It can be applied with equal applicability to every situation where the person's conduct involves honest action or its opposite (p. 346). Must not such an ideal at best be blunt, hazy, and impracticable? There is no explicit *definition* of honesty. Why should such an ideal be used as a trait measurement with children? There are only radiant clear *descriptions* of behavior in which honest action is depicted.

To quote the author again, "no man can be consistently honest in every situation," for circumstances alter cases. "The general trait of honesty" (p. 325), is, then, an intangible and mythical abstraction. Absolutes and relatives can hardly get together in ethics. Definitions break down when checked by descriptions. Pluralism must prevail in ethical theory that would remain scientifically rooted. Consequently, does not radical empiricalism remain the safest approach in character education through public school teaching?

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